UNIVERSITY OF LIVERPOOL

Nascent Entrepreneurial Teams (NETs): An Insight into Their Composition and Its Effect on Success

Thesis Submitted in Accordance with the Requirements of the University of Liverpool in Partial Fulfilment of the Requirements for the Degree of Doctor in Philosophy

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Abstract

The thesis explored nascent entrepreneurial team (NET) composition and its effect on business success. Drawing on team formation theory (i.e. homophily, similarity-attraction paradigm, rational process model, cognitive resource perspective theory), the thesis addressed the composition, typology and effect on future success in nascent entrepreneurial businesses started by teams. To do so, this thesis addresses three research questions: *1) What types of composition are prevalent in NETs? 2) What different team profiles or types can be identified among NETs, based on their compositional dimensions? 3) What effect does NET composition have on nascent entrepreneurial success?* NET composition is studied by calculating the degree of diversity and physical proximity within the team. In line with the current literature, four dimensions of NET composition are examined: Demographic Diversity, Human Capital, Resource Heterogeneity, and Familiarity.

The research is conducted by using data from the US Panel Study of Entrepreneurial Dynamics II. The dataset provides information on each team member of the NET and records information about the business over a period of five years. This enables examination of NET composition and its effect on the nascent business success. Thus, the units of analysis considered in this thesis are the team for the predictor variables and the firm for the outcome variables. Overall, the quantitative exploratory study revealed that NET composition has an effect on the probability of success as a nascent business, but has no significant impact on the time taken to achieve success

The present thesis makes original contributions to the existing body of knowledge on entrepreneurship in three ways. First, this thesis adds to entrepreneurship literature by exploring to what extent team formation theory can be applied in the nascent entrepreneurial context. Second, this thesis considers the effect of team composition on three dimensions of success, which aims to clarify the current debate regarding success measurement when studying nascent entrepreneurial stage. Third, this thesis introduces an innovative way to study NET composition by considering a typological approach, which at the same time adds to the few methodological efforts to use clustering in entrepreneurial research. Lastly, the findings of this thesis have implications for practitioners, advisory bodies, and policy-makers. For practitioners, the conclusions suggest that attention should be given to identify the potential limitations and advantages related to the team composition/configuration. For advisory or consultant bodies, the present results are helpful in designing better support programmes and training courses for NETs. Finally, while this thesis does not explicitly concern itself with entrepreneurial policy, its findings can suggest a number of implications worth of attention in support to entrepreneurial activity.

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Chapter 1. Introduction

1.1 Rationale

Entrepreneurship has been widely recognised for its effect on the economy and society by increasing productivity (Rotefoss and Kolvereid, 2005; Hopp and Stephan, 2012) and the creation of new jobs (Van Gelderen *et al.*, 2006; Klotz *et al.*, 2014). Nevertheless, such contributions would not be possible were the entrepreneur unable to create a viable business (Reynolds 1994). Not all entrepreneurs get to see their dreams come true, as some give up for various reasons (Wagner, 2006). It is difficult to estimate the percentage of failure, as it depends on each country's nascent entrepreneurial population. According to panel studies on nascent entrepreneurs, between 18% and 41% of start-ups disappear within the first year (Wagner, 2006). Evidence from the US (Aldrich and Martinez, 2001; Reynolds and Curtin, 2009) and many other parts of the world (Davidsson and Wiklund, 2001) suggests that setting-up a viable business is the key challenge for new entrepreneurs. This highlights the need to focus attention on the precise period of the business life cycle labelled the nascent stage (Reynolds and Curtin, 2009).

The nascent stage focuses on entrepreneurs who initiate "serious activities that are intended to culminate in a viable business start-up" (Reynolds, 1994). So far, studies have focused on individual entrepreneurs; however, entrepreneurial activity commonly resides in more than one person (Gartner *et al.*, 1994). Empirical research has demonstrated the impact of team efforts by affirming that teams outperform and have a higher probability of success than solo, heroic entrepreneurs (Kamm *et al.*, 1990; Vyakarnam *et al.*, 1999; Chen and Wang, 2008; Foo, 2011). The main argument is that teams have more than just one person to deal with all the vicissitudes that are expected when starting a new business (Schjoedt *et al.*, 2009). Even when acting alone, many entrepreneurs go to other people to cover key deficiencies that otherwise would hamper the future of their new venture (Steffens *et al.*, 2012). Therefore, having a team makes it easier to fulfil many of the components required for building an organisation from nothing (Vyakarnam and Handelberg, 2005).

Entrepreneurial teams can be investigated from different angles such as intentionality (Shepherd and Krueger, 2002), time and process (Vyakarnam and Handelberg, 2005),

and composition (Aldrich, 1999; Ruef *et al.*, 2003; Ruef, 2010; Steffens *et al.*, 2012). These three topics have provided valuable explanations in regards to how and when teams are formed. Yet, authors like Horwitz and Horwitz (2007) and Klotz *et al.* (2014) stress that shifting the emphasis to compositional aspects at a team level will enrich entrepreneurship research.

Team composition has been studied widely in the literature on top management teams and group formation (Chandler *et al.*, 2005), but entrepreneurial teams have not been studied in great depth (Klotz *et al.*, 2014) and even less at the nascent stage (Ruef *et al.*, 2009; Steffens *et al.*, 2012). According to the literature (Aldrich and Kim, 2007; Ruef *et al.,* 2009; Vogel *et al.,* 2014; Klotz *et al.,* 2014), there are different theories that help to explain why individuals tend to work with certain people instead of others. They can be grouped into two categories. The first suggests that teams tend to be made up of similar individuals (Byrne, 1971; Bird, 1989; Forbes *et al.*, 2006), and the second suggests that team members tend to be diverse (Aldrich and Kim, 2007; Vogel *et al.* 2014). Some of the theories that can be found in the first category are: the social psychological model (Forbes *et al.*, 2006), the similarity-attraction paradigm (Byrne, 1971), and homophily (McPherson *et al.*, 2001). These theories state that individuals join together to start a team based on attraction, shared similarities among members and best-fit. The second category is explained through the rational process model (Aldrich and Kim, 2007) and cognitive resource perspective(Vogel *et al.*, 2014). In contrast to the first category, these theories propose that individuals are more interested in actual skills, knowledge and experience. This means that individuals are looking for others to start a team based on instrumental qualities. Thus, when reviewing the literature on team composition, it can be observed that teams may have either homogeneous or heterogeneous structures.

In addition to diversity, and in line with the homophily theoretical framework, scholars have also pointed out that team formation can be influenced by familiarity (Hinds *et al.*, 2000; Ruef *et al.*, 2003). This compositional construct draws on physical proximity and social relationships (e.g. friendship or family) instead of forming a team based on instrumental factors. In this sense, nascent entrepreneurial team (NET) formation and composition is influenced by the nature of the interaction of team members (Schjoedt *et al.*, 2013), and can be studied not only according to the level of diversity, but also by

familiarity.

Minimal research has been conducted on what Horwitz (2005) referred as the right composition of individual attributes, and only a small portion of this research has focused on the individual attributes in a nascent entrepreneurial context (Ruef *et al.*, 2003; Klotz *et al.*, 2014). As a response to this necessity, and based on current studies in team composition diversity, this research considers four different compositional constructs and their corresponding variables: demographic diversity (gender, age, and ethnicity); human capital (level of education, industry experience, and start-up experience); resource heterogeneity; and familiarity (physical proximity based on existing social relationships).

Academics in the field of entrepreneurship have also called for research on the unresolved debate in relationship to team composition and its effect on nascent entrepreneurial success[1] (Klotz *et al.*, 2014; DeSantola and Gulati, 2017). This is relevant since the fundamental purpose of entrepreneurial activity is the creation of new businesses (Reynolds, 1994). As Schoonhoven *et al.* (2009) point out, "one of the challenges of organisational scholarship is defining when an organisation begins to exist" (p. 219). Therefore, this thesis considers three dimensions to capture success: first sale, profitability type I (indicating firms whose monthly revenue exceeds the monthly expenses), and profitability type II (cases where the monthly revenue not only exceeds the monthly expenses but also includes the owners' salaries).

1.2 Objectives

The main purpose of this thesis is to investigate NET composition and its effect on nascent entrepreneurial success. It has the following specific objectives:

- To examine team composition in the nascent phase by studying the compositional constructs as separate entities and the potential association and differentiation;
- To develop a typology that enables the study of NET composition from a multivariable and configurational perspective;
- To evaluate the effect of NET on success by contemplating three different

[1] Academics have managed other terminologies to measure the effects of composition in the nascent stage such as performance, firm birth, success, and outcomes.

dimensions of success.

1.2.1 Approach

To address the three objectives, this research adopts an exploratory quantitative approach given the scant body of literature on nascent entrepreneurial studies and team configurations. In doing so, this thesis utilises data from the US Panel Study of Entrepreneurial Dynamics II (PSED II). The analysis consisted of three phases. First, a descriptive analysis and Pearson chi-square, cross tabulations and t-test were conducted to study NET composition and the potential differences and associations between four compositional constructs and their corresponding variables: demographic diversity (gender, age, ethnicity), human capital (education, industry experience, and start-up experience), resource heterogeneity, and familiarity. Second, a Cluster TwoStep analysis was carried out to identify profiles and types when considering the four constructs simultaneously. Third, multivariate analyses were performed to account for the effect of NET composition on firm success. The analyses consisted of logistic and multiple linear regression models. The purpose of logistic regression was to identify whether or not a particular dimension of success had been achieved. The purpose of the multiple linear regression was to measure the time taken for a team with a certain composition to reach a particular dimension of success.

1.3 Potential contributions

This study contributes to the entrepreneurship literature by focusing on entrepreneurial teams, rather than solo entrepreneurs, which is the unit of analysis for a large majority of entrepreneurship research. It also adds to the team literature by applying team formation theory in the context of nascent entrepreneurship (Byrne, 1971; Bird, 1989; McPherson *et al.,* 2001; Vogel *et al.,* 2014). Team formation theories (i.e., homophily, similarity-attraction paradigm, rational process model, cognitive resource perspective theory) seem to be efficient in capturing people´s preferences for starting a team, either with someone who complements their current skills, characteristics or resources (Vogel *et al.*, 2014), or with someone whose characteristics and skills are similar to theirs (Byrne, 1971; Bird, 1989), in a larger or established business. Little is known, however, about how these theories help to explain team formation in the early stages of starting a business (Davidsson and Wiklund, 2001; Klotz *et al*., 2014). So, this thesis documents the

extent to which the current findings can be applied to NETs.

To achieve this, different compositional constructs (i.e., demographic diversity, human capital, resource heterogeneity, familiarity) are explored as separate entities in order to study NET composition predominance in terms of diversity and proximity. Furthermore, this study adopts a typological approach that allows identification of profiles, types, tendencies and patterns in NET compositions. This adds to the current understanding of team composition, which is based on single to multiple dimensions, capturing with greater accuracy how people at the nascent stage join together to start a team. The study of NET composition from a multivariable and configurational perspective not only adds to the current understanding of NET formation, but also makes a significant and relevant contribution to methodology, adding to the few current methodological efforts that use clustering to create a typology (Woo et al., 1991; Korunka *et al*., 2003).

This thesis also contributes to the ongoing debate regarding the cause and effect relationship between NET composition and success. To that end, this study considered the four compositional constructs, with their corresponding variables, as separate entities: demographic diversity (gender, age, ethnicity), human capital (education, industry experience, start-up experience), resource heterogeneity, and familiarity, and also the NET typology developed in this study. Further, this thesis contributes to the understanding of this cause and effect relationship by considering three dimensions of success in an attempt to clarify inconclusive or contradictory current findings, as highlighted by Schoonhoven *et al.* (2009). First, the impact of composition on whether a team achieves their first sale is studied. Once the team has started to trade, the effect of composition on generating enough income to cover the nascent business expenses for a period of six months is evaluated. Finally, analyses are performed to determine if team composition has an effect on whether or not the team is able to make withdrawals from the business that let them cover the business expenses and owners' salaries for six months. Consideration of these three measured outcomes reveals how important it is (or not) to choose the right team members, depending on the necessities of the nascent business, whether it is to simply start operations, or achieve a more profitable and economically stable type of business.

This study should be of interest to current and future entrepreneurs, serving as a guide to team member selection and team interaction, and indicating the potential pitfalls or advantages a nascent team can face in the early stages, given their initial composition. Likewise, this thesis contains useful information for consultants and advisory bodies for the design of support and training programmes. Lastly, the findings in this thesis should be helpful to policy-makers interested in supporting entrepreneurial activity.

1.4 Thesis outline

This doctoral thesis is organised into eight chapters, followed by supportive appendices:

Chapter 1: Introduction. This chapter introduces the rationale of this investigation, the objectives to be addressed, approach and the potential contributions of this thesis.

Chapter 2: Entrepreneurship. This is the first of two literature chapters that presents an overview of the economic and sociological impact of entrepreneurial activity, and the different approaches and theoretical frameworks used to understand entrepreneurship. It concludes by providing the definitions used in the course of this thesis and highlighting the need to conduct studies that focus on NETs.

Chapter 3: Nascent Entrepreneurial Team Composition. The second literature chapter explains how people join together to start a team. It briefly discusses the different approaches that have been used in literature to explain the reasons why people prefer or avoid working with others when starting a firm. It presents the four constructs used in this thesis to study NET composition.

Chapter 4: Research Paradigm and Methods. The chapter reflects on the research paradigm adopted in this thesis. It also describes the sample and how the variables were operationalised. The chapter concludes by explaining the analysis strategy for the exploratory quantitative study.

Chapter 5: Portraying Nascent Entrepreneurial Team Compositions. The chapter's objective is to present the descriptive data detailing the characteristics of the team members, the nature of the NETs, the association between teams with different compositions, and the types of teams. In doing so, it answers the first and second research questions.

Chapter 6: Analysis of NET Success. The chapter includes the analyses of NET composition and its effect on the three dimensions of success. To conduct this analysis, logistic and multiple linear regression models were performed. This chapter answers the third research question.

Chapter 7: Discussion and Findings. This chapter reflects on the results of Chapters 5 and 6, and links them with the current nascent entrepreneurship and team literature.

Chapter 8: Conclusion and Future Directions. This chapter presents final remarks relating to this thesis' exhaustive analysis of NET composition and its effect on success. It also highlights the contributions and implications to the field of entrepreneurial research, particularly in the NET context.

Chapter 2. Entrepreneurship

2.1 Introduction

This chapter presents a review on the nature of entrepreneurship. It explains the economic and sociological impact of entrepreneurial activity, and why researchers have paid special attention to this phenomenon. It also explains the different theoretical frameworks that have been used to understand entrepreneurship.

This chapter provides the reader with a roadmap to the definitions used in the course of this thesis. It discusses the different terminologies that have previously been used as synonyms for 'entrepreneur'. Having clarified who an entrepreneur is, and the extent of the definition, this chapter discusses and frames the scope of the study: the nascent entrepreneurial team (NET). To do so, the thesis first proceeds to define the nascent entrepreneur by framing it on the business life cycle. Second, it introduces different definitions used by authors who have selected 'teams' as the unit of analysis. The chapter concludes by providing its own definition of nascent entrepreneurial teams and emphasising the reasons of studying teams rather than solo-entrepreneurs.

2.2 Entrepreneurship as a domain of study

2.2.1 Impact of entrepreneurial activity

Assessment of the effect of entrepreneurship has changed due to the growing recognition of its importance in the economy and in the society. Schumpeter (1934), placed the effect of entrepreneurial activity in an economic perspective, suggesting that it is the principal element of economic growth. However, entrepreneurship' first formal appearance on the education curricula as a separate discipline was in the 1950s in some universities in Japan and the US (Kao, 1993), but it was not until the late 1970s and early 1980s that entrepreneurship was fully appreciated as a crucial driving force in the economy (Amit *et al.*, 1993; Nightingale and Coad, 2014). Since then, this view has been constantly supported by academic studies (Baumol, 2000; Ács and Audretsch, 2006; Gartner *et al.*, 2010; Newbert and Tornikoski, 2013; Cumming *et al.*, 2014; Matejovsky *et al.*, 2014; Audretsch *et al.*, 2015) which concluded that entrepreneurship contributes to productivity (Rotefoss and Kolvereid, 2005; Hopp and Stephan, 2012), represents a

means of job creation, aids innovation in products and services, and enhances firm competitiveness (Van Gelderen *et al.*, 2006; Klotz *et al.*, 2014). Small wonder, then, that governments past and present have encouraged the creation of new entrepreneurial businesses through policy-making, tax incentives and educational programmes (Wennekers *et al.*, 2005; Audretsch *et al.*, 2015). Entrepreneurship is thus highly significant in the economic, social, and political spheres. Therefore, the ruminations about entrepreneurship by academics have generated, and currently sustain, a lively field of study with many gaps worthy of investigation.

Several studies have been conducted to understand how entrepreneurship affects the economy. Scholars have provided different insights by investigating and comparing different levels of analysis (i.e. cities, countries, or regions), finding positive effects. For instance, the Global Entrepreneurship Monitor studies entrepreneurial dynamics at a worldwide level, providing the opportunity to analyse information and contrast results from more than 100 countries (Monitor, 2008). In addition to global studies, Cumming et al. (2014) studied the effect of entrepreneurial activity at the national level, comparing three data sets: the World Bank (125 countries), the OECD (24 countries from Western and Eastern Europe, and Brazil, Canada and the US) and Compendia (11 countries from Western Europe, and Canada and the US). These concluded that start-ups make a significant contribution to the economies of the investigated countries. According to these studies, each 1% increase in new business each year is expected to increase GDP per capita by 0.24%, reduce unemployment by 0.13%, and increase the amount of exports and GDP by 0.03% in the subsequent year (Cumming *et al.*, 2014). Entrepreneurship has also been identified as a determining factor of regional growth. In Canada, which is recognised as one of the most entrepreneurial countries (Matejovsky *et al.*, 2014), not only has entrepreneurship influenced or had a pivotal role in the Canadian regional economy, it also outperforms other growth drivers.

It is not just at the country or regional level that consideration of entrepreneurship is important. Authors like Audretsch et al. (2015) discuss the need to study the economic effect of entrepreneurship at a city level. After comparing large versus small- and medium-sized European cities, they concluded that entrepreneurship has a positive influence on economic development, regardless of market size. They found that the effect

of entrepreneurship in the economy (measured as GDP per capita) can be observed over different time periods depending on the size of the city; three years for large cities and up to seven years for small/medium size cities.

As with most academic inquiries, the study of the entrepreneurial economic effect has been complicated. Many different outcome measures have been used in attempts to reach reliable conclusions. Van Praag and Versloot (2007) identified four ways to address this complex task: a) productivity and growth, operationalised as a country's GDP; b) employment, which can be analysed in terms of quality (remuneration offered) or quantity (number of jobs created); c) innovation, with a wide range of quantity (e.g. research and development expenditures) and quality (e.g. patent citations) indicators; and d) utility, such as expected incomes, risk and job satisfaction. By doing so, Van Praag and Versloot (2007) compared the entrepreneur and non-entrepreneur contributions to the economy, concluding that entrepreneurs "engender relatively high levels of employment creation, productivity growth and produce and commercialize high-quality innovations" (p. 377). Regrettably, the positive effects of entrepreneurship are highlighted most of the time, and the negative are overlooked (Nightingale and Coad, 2014). Indeed, entrepreneurs might create more job opportunities, but their capacity to offer a good remuneration is not very high. In such a case, incumbent firms may offer an attractive competitive wage and may be in a position to offer better benefits, but their level of job satisfaction may not be as high as in an entrepreneurial environment (Van Praag and Versloot, 2007; Nightingale and Coad, 2014; Sørensen and Sharkey, 2014). The entrepreneurial positive and negative effects were further discussed by Nightingale and Coad (2014) who referred to entrepreneurs as either 'muppets' or 'gazelles'. The 'muppets' are those entrepreneurs showing low levels of performance, and 'gazelles' are those with high levels of performance. According to their analysis, 'muppets' are common, whereas 'gazelles' are like 'lottery winners'. The distinction made by Nightingale and Coad (2014) enables to realise that the positive effect of entrepreneurship may not be the same for all the entrepreneurs.

Whether entrepreneurial activity leads to failure or success, this activity still affects society by presenting a chance to gain greater autonomy (Van Praag and Versloot, 2007), self-employment (Douglas and Shepherd, 2002), achievement (McClelland, 1967), 'being

your own boss', career mobility (Sørensen and Sharkey, 2014) and to sustain family tradition (Schoof, 2006; Shane, 2008; Sørensen and Sharkey, 2014). Indeed, it would be ideal to have only successful cases (whether muppets or gazelles), but entrepreneurship cannot represent a 'promised land' that solves every country's economic and social dilemmas.

To summarise, entrepreneurship has been shown to have a special role in the economies and societies of countries all around the world. However, the contribution of entrepreneurship to the economy and society cannot be a reality unless the business is established as a success, rather than just an attempt. Further studies on entrepreneurship could reveal important findings to improve our understanding of the phenomenon and so may increase the efficiency of entrepreneurial efforts, benefiting the individual, community, society and country where it is based.

2.3 Entrepreneurship research

The undeniable importance of entrepreneurship has triggered numerous investigations around the globe. Before positioning this research within entrepreneurship literature, it is important to review the current theoretical frameworks that have been used to make sense of this phenomenon, i.e. how entrepreneurship has been investigated. This field has developed over the last three decades by building on theories and concepts from a wide variety of other disciplines such as management, organisational behaviour, sociology, psychology and economics (Kuratko *et al.*, 2015). The interdisciplinary foundation of the entrepreneurship literature led Kuratko et al. (2015) to bring some order into proceedings by identifying eight key areas of scholarly interest:

- **Venture financing,** referring to new businesses that use venture capital and angel capital. Recent studies have investigated the synchronicity between the two sources of capital and the role of policy-makers in boosting innovation (Berkovitch *et al.*, 2015).
- **Corporate entrepreneurship**, referring to the entrepreneurial activity of large organisations. It is considered as the path to innovation for large industries, and also as a relevant source of knowledge (Zahra and Nambisan, 2011).

- **Social entrepreneurship and sustainability** refers to new firms whose main purpose is to create superior social value. These new firms cover reasonable needs through social actions improving the life of the individual and wider society (Mort *et al.*, 2015).
- **Entrepreneurial cognition**. This is related to the psychological aspect of conducting entrepreneurial activity. The purpose of these studies is to explain the different methods used by various types of entrepreneurs to achieve success (Kuratko *et al.*, 2015). Some studies in this area have focused their attention on situated cognition, where they have found that cognitive processes go beyond the individual mind (Dew *et al.*, 2015).
- **Women and minority entrepreneurs**. The prevailing thought underpinning this stream of academic literature is that women and minorities face different constraints and barriers when attempting to set up their own firms. The plight of women and minority entrepreneurs has ignited scholarly interest (Adachi and Hisada, 2017; Caliendo *et al.*, 2015; Santos *et al.*, 2016).
- **Global entrepreneurial movements** have caught the attention of scholars in terms of how entrepreneurship is affecting the global economy, and how entrepreneurs can benefit from a global culture (Ács *et al.*, 2014).
- **Family businesses** have become one of the main areas of study in entrepreneurship due to the role that families play in entrepreneurial activity. For instance, Cruz *et al.* (2017, p.203) concluded that families represent a distinctive entrepreneurial context driven by stewardship behaviours and kinship ties determining team membership.
- **Entrepreneurial education***.* These studies consider how educational systems and educational background influence entrepreneurship. Some of the studies on this theme have revealed interesting findings. For example, people with high levels of analytical and creative abilities have been found more likely to be entrepreneurs thanks to their family environment and basic education (Lourenço and Jayawarna, 2011).

Kuratko *et al.* (2015), classified some of the approaches used in entrepreneurship, yet there are many more, and so they proposed a 'framework of frameworks' to serve as guidance for novice researchers (See Appendix 1). The six groups of frameworks

identified in their work were:

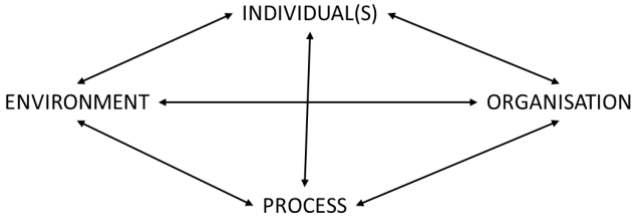
- **Schools of thought** framework, which divides entrepreneurship activities into two groups to be analysed (the macro and micro levels);
- **Integrative** framework, which argues that entrepreneurship is the result of a combination of variables like the process, the entrepreneur, and the context;
- **Typology of entrepreneurs** framework, which focuses on the entrepreneurs themselves;
- **Process** framework, which considers the non-sequential stages entrepreneurs go through to create a new firm;
- **Venture typology** framework, which is concerned with the type of firm that is going to be created in terms of size and growth rate; and
- **Lifecycle** framework, which appreciates the fact that entrepreneurial organisations evolve and are developed over a period of time (see Kuratko et al. 2015 for a review).

A likely reason for this abundance of frameworks is that, quite simply, scholars have yet to agree on a consistent and concise definition of entrepreneurship (Kuratko *et al.*, 2015), and it is no surprise that this continuous discussion about a definition has given rise to different frameworks. Shane and Venkataraman (2000), for example, define entrepreneurship as "the study of sources or opportunities; the process of discovery, evaluation and exploitation of opportunities; and the set of individuals who discover, evaluate and exploit them" (p. 218). Others have highlighted uniqueness as an identifying factor, defining entrepreneurship as "the process of extracting the profits from new, unique and valuable combinations of resources in an uncertain and ambiguous environment" (Amit *et al.*, 1993, p.816), or simply as "the creation of new enterprise" (Low and MacMillan, 1988, p.141). The diversity of opinions has made a difficult task to identify how many frameworks there are to examine entrepreneurship (Shane and Venkataraman, 2000).

Scholars have used these different approaches and frameworks based on their core concepts, inspirations, and assumptions (Steyaert, 2007; Fisher, 2012; Moroz and Hindle, 2012). Jones *et al.* (2013) and Fisher (2012) described four approaches as convergent on

theorising entrepreneurial activity: new venture creation (Gartner, 1985), causation and effectuation (Sarasvathy, 2001), an individual-opportunity nexus approach (Shane and Eckhardt, 2003), and bricolage (Baker and Nelson, 2005).

Gartner (1985) focused his scholarly attentions on the multidimensional nature of the definition of a new venture. By doing so, Gartner (1985) was the first to combine the four dimensions of new venture creation (see Figure 2.1): the individual, the organisation, the environment, and the new venture process. First, the *individual* is the person or people with the key or necessary characteristics to start a new firm. Second, the *organisation* is referred to as the type of firm that the entrepreneur attempts to create. The *environment* refers to the fixed conditions over which the new organisation does not have any control. Gartner's (1985) fourth and final dimension is the new venture *process,* where he identified six behaviours, which are not necessarily sequential: the identification of the business opportunity, the accumulation of resources, the marketing of products and services, the production of goods or services, the creation of the business, and the response from the entrepreneur to government and society.



Source: (Gartner, 1985, p.698)

Figure 2.1 A Framework for describing new venture creation

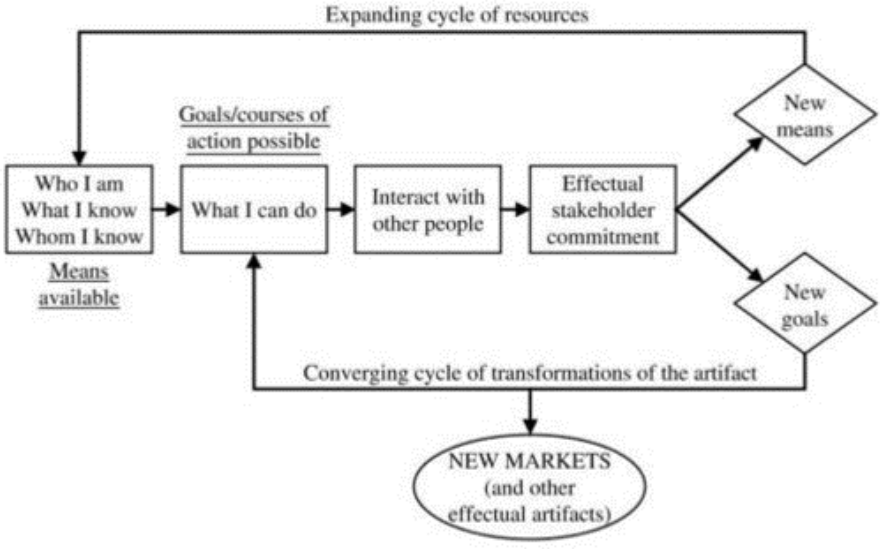
The purpose of Gartner's (1985) conceptual framework was to illustrate how complex the entrepreneurship phenomenon is, and to highlight the need to appreciate it in a more holistic manner. However, Moroz and Hindle (2012) pointed out some limitations in Gartner's (1985) work, noting that none of the six process components help to describe the distinction between managerial duties and entrepreneurial ones.

Moreover, Sarasvathy (2001) proposed the causation and effectuation approach. According to the concept of causation, an entrepreneur selects a programmed goal and then chooses between means to achieve that goal. Effectual and causal theories have their differences. Sarasvathy (2008) used the metaphors of a patchwork quilt and jigsaw

puzzle to explain it; while the patchwork quilt (effectuation) provides flexibility and can be made in any way possible where the imagination is the limit, the jigsaw puzzle (causation) is already shaped and only by joining the right pieces in the right place the only possible result is achieved.

The *causation process* starts with the recognition and evaluation of opportunities. This leads to the creation of goals and the formulation of plans to take advantage of an opportunity that has been identified. Thereafter, the entrepreneur raises resources and participates in the process of creating something to exploit this opportunity. This process may hopefully lead to entry into the market place, and feedback for further refinements of the product or service (Sarasvathy, 2001; Fisher, 2012).

By introducing the theory of *effectuation* (Figure 2.2), Sarasvathy (2001) considered the unpredictable situations that often occur in the highly dynamic entrepreneurial environment. This effectual approach highlights the necessity for the entrepreneur to be flexible in respect of the environment or market that already exists, in order to adapt to the information available and any contingency that may arise when establishing the new firm (Sarasvathy *et al.*, 2014).



Source (Sarasvathy, 2008, p.101)

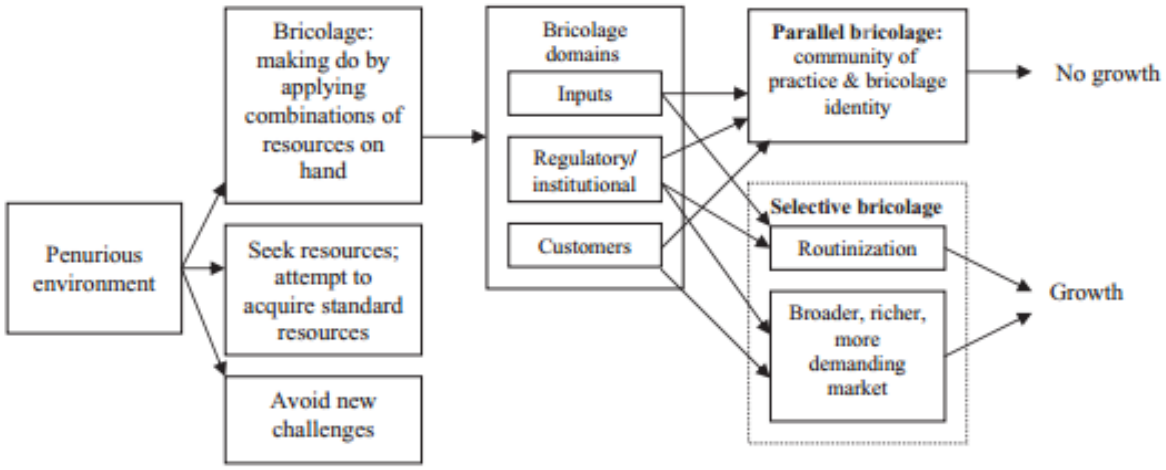
Figure 2.2 Dynamic model of effectuation

This model is defined by five effectual principles: a) means orientation, b) affordable loss, c) building partnerships, d) 'lemonade' and e) leveraging contingency (Sarasvathy, 2008; Dew *et al.*, 2015). The authors employed entertaining nicknames for some of them, which essentially act as quasi-metaphors to add vivid meaning to their effectual principles. First, *bird-in-hand* (means orientation) refers to the entrepreneur who needs to identify three categories of means to generate the latent entrepreneurial opportunity: who I am (identity), what can I do (knowledge), and what should I do (networks)? Second, *affordable loss* suggests that people base their decision to become an entrepreneur on the cost-benefit that the entrepreneurial opportunity has the potential to generate. At the same time, it depends on the amount of loss that the potential entrepreneur can manage. Third, *crazy quilt (building partnerships)* refers to the gathering of resources required to establish a new business. The dominant argument in the literature is that the entrepreneur does this through their social network. Fourth, *lemonade* relates to how the entrepreneur handles uncertainty. Effectuation considers this *Knightian uncertainty* (leveraging contingency) as an opportunity to be creative. Lastly, *pilot-in-the-plane* refers to the consideration of inevitable trends that, in conjunction with uncertainty, makes the entrepreneur conceive him/herself as "one of many who co-pilot the course of history" (Sarasvathy *et al.*, 2014, p.75).

The effectuation model has been used in more recent literature as a theoretical base. Sarasvathy *et al.* (2014) proposed the Uppsala effectual model (UE) in which, building on the effectuation model, they reinforced the significance of networks and relationships to entrepreneurship and internationalisation. Arend *et al.* (2015) provided a formal assessment of effectuation theory using three units of analysis: the core process, factors affecting the process, and the secondary process. They concluded that even though they did not attempt to diminish the relevance and contribution of this theory to entrepreneurship research, they had identified some questionable assumptions. For instance, unjustified optimism with respect to the entrepreneur's effectual abilities (e.g. creativity).

Shane and Eckhardt (2003) proposed the individual-opportunity approach, which is based on the existence of entrepreneurial opportunities. These opportunities are considered as goods or services, or even organising methods, which can be profitable.

According to Shane and Venkataraman (2000), the recognition of an opportunity varies from one person to another. They concluded that the possession of prior information along with the cognitive capacity to value this information are the two principal factors that affect opportunity detection. Therefore, people tend to have certain abilities that allow them to gather information to apply in the future. However, Shane and Eckhardt (2003) argue that it is not enough to simply retain information for future use; the discovery or recognition of an entrepreneurial opportunity also necessitates potential entrepreneurs applying this retained information in a 'savvy' way, they need to 'connect the dots'. Hence, their studies included not only the need to recognise an opportunity, but also the need to exploit it (Shane and Venkataraman, 2000; Shane and Eckhardt, 2003)



Source: (Baker and Nelson, 2005)

Figure 2.3 Bricolage approach to entrepreneurship

Finally, Baker and Nelson (2005) proposed a more flexible model, *bricolage*. The overall idea of this model is to capture the different options available to entrepreneurs in difficult environments (see Figure 2.3). The term *bricolage* was first introduced by the anthropologist Claude Lévi-Strauss (Baker, 2007) and can be defined "as making do by applying combinations of the resources at hand to new problems and opportunities." (Baker and Nelson, 2005, p.333). Lévi-Strauss (1967) differentiated bricolage from so-called 'engineering approaches' as a method of dealing with different challenges and opportunities. Unlike the idealised image of the engineer (creating solutions that need

specific requirements for particular skills, tools and materials), in bricolage, entrepreneurs create the solutions with whatever is at hand. In this sense, the entrepreneur is a kind of handy-man, and is likely to seek help or resources to provide a creative solution by looking at a social network (Baker and Nelson, 2005).

Apart from these four approaches (i.e. new venture creation, causation and effectuation, an individual-opportunity nexus approach, and bricolage), it is worth mentioning a couple more that have been used by scholars to frame their research: the evolutionary approach and complexity theory. Aldrich (1999) proposed the evolutionary approach as an attempt to study entrepreneurial outcomes, process and context simultaneously and coherently. Aldrich (1999) drew on the following concepts: a) variation, referring to the creation of new organisational structures; b) adaptation, referring to how the entrepreneur modifies the resources and the organisation to survive; c) selection, or the circumstances that lead to success or survival; and d) retention, referring to how the knowledge or good practices that really 'work' are imitated or adopted by other entrepreneurs (Aldrich and Martinez, 2001).

Complexity theory is strongly focused on the entrepreneurial process. This particular approach considers the study of entrepreneurial outcomes based on non-linear models (McKelvey, 2004). Lichtenstein *et al.* (2007) applied this approach to give an explanation of emergence and creation in entrepreneurship studies. They investigated the temporal pattern of the start-up process by using three parameters: a) *rate*, referring to the number of start-up activities completed over a period of time, b) *concentration*, measuring if the rate is constant or fluctuates, and c) *timing*, referring to the degree to which start-up activities occur earlier versus later in the time span of the event history (Lichtenstein *et al.*, 2007, p.240).

The frameworks explained in this section help to illustrate how researchers conceive entrepreneurship. Gartner (1985) offered a very complex and multidimensional perspective by considering four dimensions (individual, organisation, environment, and new venture process). This approach invites researchers to study entrepreneurship in a holistic manner. Effectuation (Sarasvathy, 2001; Sarasvathy, 2008), by contrast, focusses on the dynamics that the entrepreneurship phenomenon entails. Moreover, while effectuation focusses on goal achievement, the individual-opportunity nexus (Shane and

Eckhardt, 2003) is concerned with opportunity detection. Bricolage (Baker and Nelson, 2005), concentrates on the vicissitudes that the entrepreneur might face, offering an alternative view on the creation of a business that suggests entrepreneurs use whatever resources are at hand. Finally, other perspectives seem to be concerned about timing. Part of the literature shows demonstrable concern with how organisations evolve (Aldrich, 1999), while others debate the complexity of this process of evolution, with scholars arguing that it is not a sequence of steps in a determined order, but a chaotic apparition of the events (Lichtenstein, 2011).

In general, the particular sensibilities of each individual researcher seem to be the determining factor when trying to decide on the optimum framework to use to fully understand the phenomenon of entrepreneurship (Kuratko *et al.*, 2015). Fisher (2012) furthers this discussion by concluding that the entrepreneurship phenomenon cannot be solely explained by one single framework. In the end, all the different themes and frameworks seek to increase our knowledge of the topic and answer some of the questions posed by the academic community such as why people begin to participate in entrepreneurial activity, and – likely the most crucial and illusive – why some efforts succeed while others fail.

2.4 The entrepreneur

The field of entrepreneurship research faces many constraints, such as being a relatively recent field of study (Brazeal and Herbert, 1999; Bruyat and Julien, 2001; Klotz *et al.*, 2014), the difficulty of gaining access to reliable data (Gartner *et al.*, 2004; Reynolds and Curtin, 2009), the delimitation of the unit of analysis and methodological issues (Davidsson and Gordon, 2012), and delimitation of suitable theoretical frameworks (Kuratko *et al.*, 2015). Above all, attaining consistency is one of the major concerns to avoid subjective interpretation and achieve a more rigorous level of research quality (Brazeal and Herbert, 1999).

To attain this consistency, the first step in this thesis is to identify who the entrepreneur is. In the literature, the concept is often linked or equated to self-employment, while in others it is related to small business owners. One of the earliest definitions dates from 1730 when, entrepreneurship was defined by Richard Cantillon as "self-employment

with uncertain returns" [cited in Kao (1993, p.70)]. The concept of the small business owner has also provoked conflict among scholars (Carland *et al.*, 2002; Gartner *et al.*, 2004), and academics have tried to provide definitions and guidelines to differentiate entrepreneurs from small business owners and those that are self-employed. At first glance, the three concepts appear to be closely linked and could often be safely treated as the same thing, but it is sensible to briefly describe the difference between the terms to gain a clearer understanding of the boundaries of each concept and start to narrow the definitions of the topic of this study.

Studies have referred to self-employment as "the simplest form of entrepreneurial activity. Such people have made a job for themselves, and often for others" (Blanchflower *et al.*, 2001, p.681). Carroll and Mosakowski (1987) suggest that this area has caught scholars' attention for three main reasons: 1) self-employment is typically found in the labour force; 2) it usually involves small firms, whose economic importance resides in more job opportunities; and 3) it is related to entrepreneurship and social class as, for some researchers, self-employment represents an interesting approach to social structures and intergenerational mobility. Thus, self-employment is the term often used to identify people who are working on their own rather than for others, but this does not necessarily imply the creation of a new business (Gartner *et al.*, 2004). Rather, self-employment can include a range of options from the creation of a business, to inheritance of a family business, or even the purchase of rights from an existing firm (Carroll and Mosakowski, 1987).

Some countries vary their conception of what does and does not qualify as self-employed work by relying on legal and tax-based policies (Parker, 2004). However, even under the gaze of official legislation, there still exist grey-areas where it is not entirely clear if a person would be considered as self-employed or not, such as in the case of freelance workers or franchisers. Parker (2004) argues that:

> The self-employed are often taken to be individuals who earn no wage or salary but who derive their income by exercising their profession or business on their own account and at their own risk. Likewise, partners of an unincorporated business are usually classified as self-employed (Parker, 2004, p.6).

This suggests that someone stops being self-employed and becomes an employee when they begin to work at an incorporated business and draw a regular wage from the company.

Looking at the difference between small business owners and entrepreneurs, Carland *et al.* (1984) were among the first to explicitly differentiate between the two. They defined a small business owner as:

> …an individual who establishes and manages a business for the principal purpose of furthering personal goals. The business must be the primary source of income and will consume the majority of one's time and resources. The owner perceives the business as an extension of his or her personality, intricately bound with family needs and desires. (Carland *et al.*, 1984, p.79).

And an entrepreneur as:

> …an individual who establishes and manages a business for the principal purpose of profit and growth. The entrepreneur is characterised principally by innovative behaviour and will employ strategic management practices in the business (Carland *et al.*, 1984, p.79).

From the point of view of these scholars at least, the main qualities that serve to identify an entrepreneur are innovation, along with a heady expectation of growth and profit. Even though the purpose of the authors' work was to provide a guideline for future researchers in the area, the consideration of variables such as innovation, growth expectation or profit narrows the entrepreneurial scope of study (Carland *et al.*, 2002). In contrast, Gartner (1985) argues that proper definition and separation of the concept of the entrepreneur necessarily relies on the consideration of multidimensional variables, therefore, in Gartner's (1985) model the definition includes four elements: the individual, the environment, the process, and the organisation. The author claims that without this multidimensional perspective, the researcher is not able to capture the 'entire elephant', limiting our comprehension in the matter (Gartner, 2007).

Using 'small business owner' and 'entrepreneur' as synonyms, the entrepreneurship scope would be restricted to small businesses (Gartner *et al.*, 2004). Although small businesses have demonstrated their representativeness and economic relevance by providing employment opportunities, entrepreneurship is not only confined exclusively

to incorporated or unincorporated small businesses (Carland *et al.*, 1984; Parker, 2004). The entrepreneur also plays a role in larger organisations. As an example, entrepreneurs can be found as part of a large corporation, executing, managing or innovating a project, and not necessarily creating a new business (Parker, 2004).

The boundaries of terminologies can be quite blurred, even in current analysis. For example, when analysing some datasets such as the Panel Survey on Income Dynamics (PSID) or UK Labour Force Surveys (LFS), Carter *et al.* (2015) noted that the classification of individuals by occupation complicates the differentiation between the self-employed and small business owners. The authors expressed their concern about measurement bias, because all self-employed individuals are not necessarily small business owners, and vice versa. Even though the entrepreneur can identify self-employment opportunities or become a small business owner, these roles do not represent the entire scope of the entrepreneurial being (Westhead and Wright, 2015). However, there is no denying on the correlation of these terms as they have even been used to study the effect of one in relation to the other. For instance, Falco and Haywood (2016) wanted to study how developing nations' self-employment had increased. To do so, they analysis a panel dataset from Ghana and concluded that self-employment in the developing world has increased based on the number of entrepreneurial attempts.

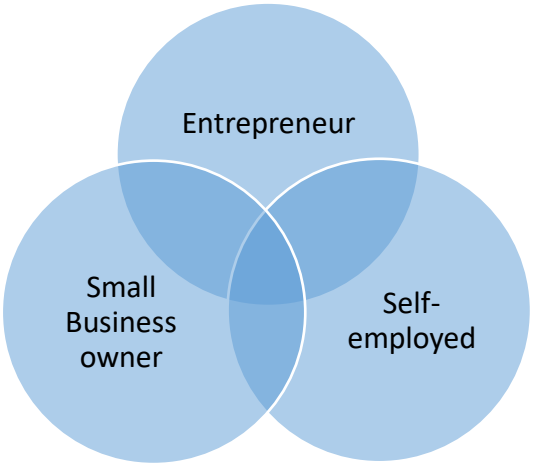


Figure 2.4 Relationship between terminologies

To sum up, there are no clear boundaries that help to distinguish entrepreneurs from either the self-employed or small business owners. However, this section has captured

the differences and highlighted the overlap among the terminologies. Indeed, none of these terminologies fits perfectly onto another (see Figure 2.4). Rather, each exists as an individual concept, and can be related to, or identified with, one another depending on how each researcher frames their investigation.

2.5 Nascent entrepreneurs

As discussed in the previous section, the definition of 'entrepreneur' is not conclusive. Knight (2012) described the entrepreneur as someone who possesses a low level of uncertainty aversion, while Amit *et al.* (1993) provided a more opportunity-profit oriented definition and others like Dennis (2011) used a competition-based definition. This thesis narrows its attention to just one of the three major types of entrepreneurs identified by Rotefoss and Kolvereid (2005): nascent entrepreneurs (NE). These authors identified three types of entrepreneurs: a) the *aspiring entrepreneur*, the individual who desires to have a business; b) the *nascent entrepreneur*, the individual already engaging with the firm creation process; and c) the *business founder*, the individual who has reached the goal of the entrepreneurial activity (i.e. the operation of the firm).

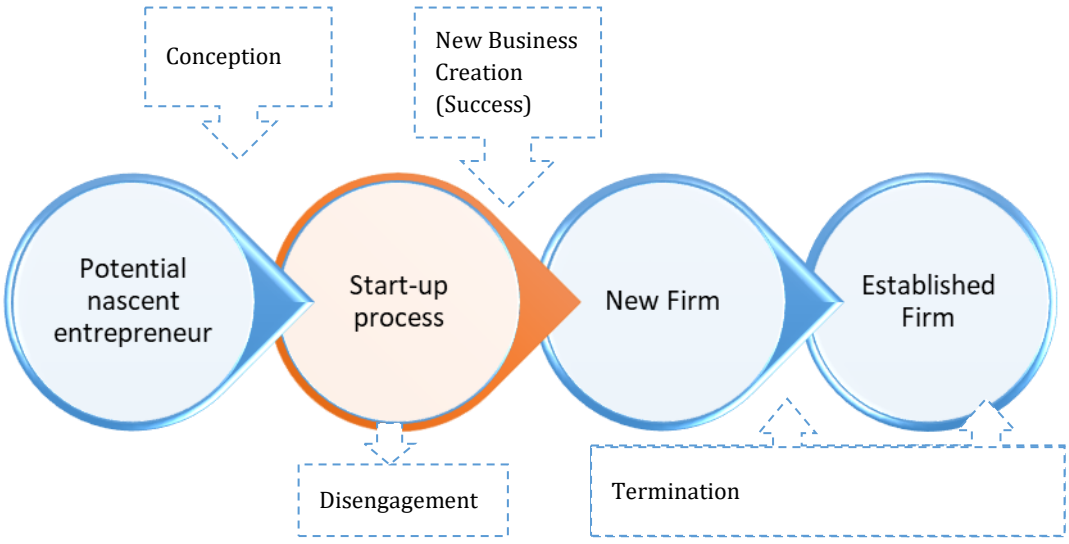
Like entrepreneurs, 'nascent entrepreneurs' also evade a universally-agreed definition. A popular way to define the NE, as Rotefoss and Kolvereid (2005) do, is in relation to the process of becoming an entrepreneur. In such a case, Hopp and Stephan (2012) define nascent entrepreneurs as those who have decided to become entrepreneurs and are actively working towards their goal of running a fully-fledged entrepreneurial firm. Based on this definition, the NE is the entrepreneur in the gestation stage of the process, according to Reynolds and Miller (1992) model. This stage can take from one month to ten years, but the majority will only take three years or less (Reynolds and Miller, 1992). Thus, a person can be identified as a NE if they have completed at least one of the gestation activities and engaged in the start-up process (Steffens *et al.*, 2012).

Looking at the plethora of NE definitions (see Table 2.1) some are specific in terms of operation (Aldrich and Martinez, 2001), whereas others specify the requirements to be considered a NE (Reynolds, 1994). Taking these definitions as reference points, this research defines a NE as *'someone who has an idea for a business and undertakes action to make it happen'*, and so focusses on the phase between the breakpoints of 'conception'

and 'new business creation'.[2] To illustrate this further, Figure 2.5, captures these two breakpoints plus the entrepreneurship life course.

Table 2.1 Overview of different definitions of nascent entrepreneur

Author	NE Definition
Reynolds (1997, p.451)	"Those that report two or more firm gestation behaviours are considered NE."
Aldrich and Martinez (2001, p.5)	"Operationally, someone becomes a NE if they not only say they are currently giving serious thought to the new business, but also are engaged in at least two entrepreneurial activities, such as looking for facilities and equipment, writing a business plan, investing money, or organising a start-up team."
Korunka *et al.* (2003, p.26)	"NE are defined as persons who are in the start-up process of their planned ventures, beginning with initial start-up activities, such as contact with a start-up advising centre or bank, development of a business plan, and so forth, and ends before market entry (realising the first revenues)."
Van Gelderen *et al.* (2006, p.319)	"The person undertaken activities to create a business is referred to as the nascent entrepreneur."



Source: Modified from Reynolds and Curtin (2009, p.4)

Figure 2.5 Business life course, context, and transitions

Having defined the NE and the context of this investigation, the next salient question is why these nascent entrepreneurs are important. Entrepreneurship affects countries'

[2] Other authors have referred to firm birth using different names or labels such as 'creation of the business', 'firm birth', 'new business', or 'operating business'.

economies, but to reach that point a new business needs to be a success and not just a dream. The NE is at the first stage of the start-up process. Understanding the nascent stage of the business enables comprehension of the reasons of their future success or failure. Aldrich (1999) suggests that job opportunities and innovation do not increase unless organisations are created, and entrepreneurial studies have moved beyond the consideration of established entrepreneurs and concentrated on nascent entrepreneurs. In doing so, studies have paid special attention to the early and critical phase of entrepreneurship that includes from the 'conception' of the business to 'new business creation' (Reynolds, 1994).

Investigating nascent entrepreneurs (NEs) is a difficult endeavour due to the difficulty in tracing them as this type of entrepreneur remains unregistered most of the time. Luckily, in the last couple of decades scholars have started to overcome this challenge by using secondary data (Reynolds, 1997; Van Gelderen *et al.*, 2006). Several countries like Australia, Sweden and the US have strived to provide national surveys to analyse their NEs (Reynolds and Curtin, 2009). The US Panel Study of Entrepreneurial Dynamics (PSED), for example, provides valuable longitudinal data of this type of entrepreneur. This particular dataset represents one of the first attempts to extend our understanding of NEs (Reynolds and Curtin, 2009; Reynolds, 2010).

Other researchers have collected their own data, providing significant findings. For example, Alsos and Kolvereid (1998) analysed 12 months of data from 205 NEs in Norway. The research concluded by identifying three types of entrepreneurs: a) *novice founders*, referring to individuals who have never previously tried to run a business; b) *serial founders*, referring to individuals who have at least one previous experience of founding a business but it has been sold or closed down; and c) *parallel/portfolio* founders, as the above but with the difference that the previous business is still owned. Both types of datasets (primary and secondary) provide useful information on NEs, but more studies on NEs are needed to fill the gaps that have so far evaded satisfactory exploration (Aldrich and Kim, 2007; Coad and Timmermans, 2014; Klotz *et al.*, 2014). For instance, Davidsson and Gordon (2009) reviewed 62 published articles related to nascent entrepreneurial studies that used PSED or its counterparts from other countries. One of the notable findings was that, even though team-based efforts are more common than

solo-entrepreneurs, 31 were the studies focused on NEs' characteristics and only three of them investigated teams' characteristics.

2.6 Nascent entrepreneurial teams

Entrepreneurial activity often resides in more than one person (Gartner *et al.*, 1994). The reasons for studying entrepreneurship from a team perspective are twofold. First, teams are the most common form in the start-up process, and records on entrepreneurship suggest that teams make up more than 50% of the founding efforts (Kamm *et al.*, 1990; Vyakarnam *et al.*, 1999). Moreover, teams generate different results in the firm's performance measured through indicators such as sales, profitability and self-reported status (Kamm *et al.*, 1990; Schjoedt *et al.*, 2009; Sonderegger, 2010; Zhou and Rosini, 2015), regardless of national and industrial context (Lechler, 2001). Therefore, many authors have called for a detailed exploration of the entrepreneurship phenomenon as a team activity, rather than as a solo effort (Lechler, 2001; Klotz *et al.*, 2014; Vogel *et al.*, 2014).

Empirical research has added credence to the effect of team efforts, finding that teams perform more effectively and have a higher probability of success than solo-entrepreneurs (Kamm *et al.*, 1990; Vyakarnam *et al.*, 1999; Chen and Wang, 2008; Foo, 2011). The main argument underpinning these results is that teams have more than one person to deal with all the vicissitudes inherent in starting a new business (Schjoedt *et al.*, 2009). Vyakarnam and Handelberg (2005) support this, arguing that working as a team makes it easier to complete all the arduous tasks required to build an organisation from scratch. Even in individual efforts, entrepreneurs end up going to other people to cover those key deficiencies that otherwise would hamper the development of the new organisation (Steffens *et al.*, 2012).

However, NETs have not been investigated in great depth, nor have specific theories been developed around this topic that help us to understand them. Entrepreneurship has borrowed theories from different disciplines, and NET studies are no different. They tend to borrow theories from other areas like 'top management team' literature (Chandler *et al.*, 2005). Therefore, before defining NETs, it is important to differentiate the concepts of *NETs*, *Top Management Teams,* and *Groups*. Starting from the simplest term, a *Group* is

defined as "two or more individuals, interacting and interdependent, who have come together to achieve particular objectives" (Robbins, 2008, p.123). Even though the *team* is essentially a group, it is characterised by commitment and engagement between their members. In the case of *Top Management Teams,* this term is applied to executive managers who share responsibilities and, therefore, this term has high relevance for teams in larger organisations (Schjoedt *et al.*, 2009). It is also important not to use the terms *managerial team* and *entrepreneurial team* synonymously. Whereas entrepreneurial teams are genuinely engaged in new ventures, sharing control and ownership, managerial teams are just part of the organisation for as long as they receive what they have been promised (Ucbasaran *et al.*, 2003). Alternative names that have been used in the literature to refer to entrepreneurial teams include venture teams, founding teams and start-up teams (Klotz *et al.*, 2014). The conceptual differences help to identify which terms can be used interchangeably in this thesis, and which cannot.

2.6.1 Defining NETs

Several authors have developed definitions of entrepreneurial teams (see Table 2.2). Considering the similarities and differences of each, the NET can be defined as two or more individuals who: a) share responsibilities and benefits (Schjoedt *et al.*, 2009); b) jointly and actively pursue the creation of the business (Reynolds, 1994; Forbes *et al.*, 2006); c) follow a process that comprises a series of activities (Korunka *et al.*, 2003); d) have financial or other types of interest in common (Kamm *et al.*, 1990; Cooney, 2005); e) are perceived as a unit by themselves and by others (Schjoedt *et al.*, 2009); f) participate in the entrepreneurial effort from its early phases (Aldrich and Martinez, 2001); and g) combine individual characteristics and entrepreneurial actions (Harper, 2008).

For the purposes of this thesis, a NET is thus defined as:

> *Two or more individuals who share ownership and who, given their physical proximity, engage in the entrepreneurial activity by combining their characteristics and resources to achieve the creation of a new business.*

Table 2.2 Overview of different definitions of NETs

Author	Definition of NET
Cooney (2005, p.229)	"Two or more individuals who have a significant financial interest and participate actively in the development of the enterprise."
Schjoedt *et al.* (2009, p.515)	"An entrepreneurial team consists of two or more persons who have an interest, both financial and otherwise, in and commitment to a venture's future success who are accountable to the entrepreneurial team and for the venture; who are considered to be at the executive level with executive responsibility in the early phases of the venture, including founding and prestart up; and who are seen as social entity by themselves and by others."
Kamm *et al.* (1990, p.7)	"Two or more individuals who jointly establish a business in which they have an equity (financial interest)."
Harper (2008, p.617)	"Group of entrepreneurs with a common goal, which can only be achieved by appropriate combinations of individual entrepreneurial actions."
Vyakarnam *et al.* (1999, p.2)	"The top team of individuals who is responsible for the establishment and management of the business."
Ucbasaran *et al.* (2003, p.109)	"They were called as Entrepreneurial founding teams (EFT): are individuals with an equity stake in the business, and who have a key role in the strategic decision making of the venture at the time of founding."
Forbes *et al.* (2006, p.226)	"… group of people involved in the creation and management of a new venture."
Klotz *et al.* (2014, p.227)	"…a group of individuals that is chiefly responsible for the strategic decision making and on-going operations of a new venture."

This definition not only delimitate the focus of this thesis but also stresses that the individual characteristics of the members, the resources they can provide to the business, and the degree of their interactions; has an effect on the how or why individuals join together to start a business. These factors influence the team composition and their likelihood to successfully create a business.

Research performed on entrepreneurial teams has revealed significant findings (Hellerstedt and Aldrich, 2008; Horwitz, 2005; Ruef *et al.*, 2003). Harper (2008), for example, provided a taxonomy of teams including entrepreneurs and non-entrepreneurs, considering team size, organisational hierarchy, authority, and communication channels. Five categories resulted from this study:

1. **Robbisian teams**, which represent the opposite of entrepreneurial teams in the sense that they do not exhibit any entrepreneurial imagination, and everything in the firm is organised and secure so there is an established routine.
2. **Singleton entrepreneurial teams**, which are teams where there is only one person with the entrepreneur profile and the other is a transient agent who

regulates and controls the entrepreneur's decisions.

3. **Hybrid entrepreneurial-economising teams**, which is a combination of Robbisian and singleton entrepreneurial teams. One person has the Robbisian economiser profile, and the other the entrepreneurial profile. The entrepreneur finds the ends-means framework within which the non-entrepreneurial Robbisian agent economises.
4. **Nested entrepreneurial teams**. These teams possess two entrepreneurs (one identified as leader and the other as sub-entrepreneur). The lead entrepreneur deals with the majority of the pressure of the new venture because they conceptualise the business idea according to the identified opportunity. They work in a very hierarchical way.
5. **Emergent entrepreneurial teams.** These have two entrepreneurs who are seen as equals so they actually constitute a team. There is no leader or sub-entrepreneur as in the previous taxonomy. They are on an equal footing in the joint enterprise. They recognise the opportunity, go through the emergent process and deal with problems together (Harper, 2008).

Harper's (2008) work has provided a valuable taxonomy. Unfortunately, the author only considers the composition of dyadic teams and does not provide a broader explanation regarding the composition of the teams and the implications this has on the outcomes. Team size is an extremely important consideration because scholars have found that larger or smaller teams have different influences on entrepreneurship. For example, teams of four or five members with high diversity in terms of age and experience have been found more likely to launch successful firms because of the unique contribution that each member brings to the organisation (Eisenhardt, 2013). Larger teams have been associated with greater levels of heterogeneity, but this could also increase the level of conflict due to the inevitability of diverging perspectives and viewpoints (Amason *et al.*, 2006). This conflict could be either an interpersonal conflict (which occurs when members have a disagreement beyond the scope of the team's purpose) or an idea conflict (related to the potential business idea, i.e. strategies, goals or activities) (Ensley and Hmieleski, 2005). The size of the team can also have a side-effect. It could affect channels of communication, and jeopardise social integration (Chandler *et al.*, 2005). Thus, the current consideration of only dyadic teams is a significant limiting factor in the study of

nascent entrepreneurial teams, which calls for further examination.

2.7 Conclusion

The impact of entrepreneurial activity in society is quite evident; but not all entrepreneurial cases are 'gazelles' (Coad and Timmermans, 2014), and not every entrepreneur is successful. Thus, authors have tried to explain and understand why some entrepreneurs succeed where others do not. This issue has been studied through different lenses and theoretical frameworks. The work of Kuratko *et al.* (2015) is a clear example of the effort made in identifying these alternatives, but other authors have expressed differing points of view regarding how to study or conceive entrepreneurship. For some, it needs to be explained based on process or life cycles (McKelvey, 2004; Lichtenstein *et al.*, 2007). Others, like Gartner (1985), consider not only the process, but also a more holistic conception to fully grasp the entrepreneurial phenomenon. All the alternative frameworks try to provide their own perspective and have provided insightful findings that have improved our understanding.

This research also aims to understand why some entrepreneurs succeed and others fail. However, this study does not fit neatly into any of the existing frameworks discussed in this chapter, given that NETs have not been deeply studied and research of this nature is making its first steps (Klotz *et al.*, 2014). It could cautiously be framed according to the typology of the entrepreneurs' framework, but it does not set out to explain the entrepreneurial potential or motivation to become an entrepreneur. Rather, it is concerned with what Gartner (1985) identified as the first dimension of his framework: the individual (or in this case individuals).

Studies on entrepreneurship have demonstrated diversity, not only through frameworks or themes, but also in their conceptions of the 'entrepreneur'. The concept of the entrepreneur has sometimes been used interchangeably with others such as 'small business' or 'self-employed'. By identifying the differences and their close relationship, this research avoids any confusion, and presented the definitions central to this thesis: NE and NET. Although this thesis is on NETs rather than solo efforts, there is no intention to suggest that individual efforts should be overlooked. Instead, the purpose is to pay sufficient attention to the next unit of analysis: the team.

Chapter 3. Nascent Entrepreneurial Team Composition

3.1 Introduction

This chapter concisely discusses the different approaches used in the literature to explain why people prefer, or avoid, working with others when starting a firm. Thereafter, the chapter presents the four constructs used in this research to study NET composition based on diversity and degree of closeness: demographic diversity, human capital, resource heterogeneity, and familiarity. Furthermore, research conducted on the impact of team composition on nascent entrepreneurial success is reviewed. Lastly, the chapter presents a 'Gap Identification Diagram' accompanied by the conceptual model for this thesis.

3.2 NET formation

The core of any framework or approach discussed in Chapter 2 was the individual entrepreneur, which in this case is treated as a plural object. Thus, the most immediate question is how or why these entrepreneurs join together to start a business. Research into the formation of NETs can be undertaken from different angles, such as intentionality (Shepherd and Krueger, 2002), time/process (Vyakarnam and Handelberg, 2005), and composition (Aldrich, 1999; Ruef *et al.*, 2003; Ruef, 2010; Steffens *et al.*, 2012).

Krueger *et al.* (2000) proposed an ***intentions-based*** model to explain how opportunity identification can vary depending on the organisational members' perception. By doing so, the authors explained how entrepreneurial potential can be influenced by community support and desirability. Taking the view point of time, Vyakarnam *et al.* (1999), explained that team formation can happen in three different ***momentums*** identified as:

1. The entrepreneurs conceive the idea of the business and form the team regardless of the potential for success;
2. The team has already been formed and they pursue a common goal; or
3. Teams come together first so they can develop their business idea.

Bird (1989), elucidated five key ***processes*** of team formation: attraction, bonding, projection, conflict, and development. All these three instances provide valuable

explanations about teams' formation. Nonetheless, some authors have highlighted that further investigation is required from the fourth angle (i.e. composition) in order to more effectively understand not only team formation, but also its effect on entrepreneurial success (Horwitz and Horwitz, 2007; Klotz *et al.*, 2014; DeSantola and Gulati, 2017). In response, this thesis attempts to tackle how NET formation takes place from the composition approach.

There are different theories to explain why individuals tend to form a team with certain people rather than others. They can be grouped in two main categories; one theorises that people naturally migrate towards people similar to them (Bird, 1989; Byrne, 1971), while the other suggests that people collaborate with those who are different (Vogel *et al.,* 2014). Bird (1989) suggested that people join together to start a team due to existent forces between two or more individuals. These forces, according to social psychology, can be identified as: "likeability, proximity, enjoyment of each other's company, alikeness, and complementary of characteristics" (Bird, 1989, p.229). Although this provides an insight into why people join together, it does not entirely reflect if the likeability or alikeness or enjoyment of each other's company happen because the two people possess similar, or totally different, characteristics, resources or affective attachment. Aldrich and Kim (2007) explained this issue further by considering rational process and social psychological models. The first highlights the importance of actual skills, knowledge and experience, while the second emphasises the importance of attraction and similarity between members. They argued that entrepreneurial cases that are more formal or well-institutionalised have a tendency to adopt a more rational process model (instrumental view) rather than a psychological one (best-fit).

Likewise, the similarity-attraction paradigm and cognitive resource perspective theories can aid explanation of the team formation phenomenon (Byrne, 1971; Horwitz, 2005; Vogel *et al.*, 2014). For instance, Byrne (1971) proposed the *similarity-attraction* paradigm, which is derived from the social psychology field. Similarity-attraction paradigm states that individuals join together based on their degree of similarity in terms of personal characteristics. It assumes that individuals who share similar characteristics identify more with one another and consequently feel more comfortable together. By having similar people in the team, conflict among team members is likely to be reduced

thanks to the minimisation of communication barriers. At the same time, the cohesive team may reduce uncertainty feelings related to the external environment (Vogel *et al.*, 2014). Similarity-attraction paradigm concludes that homogeneity, rather than heterogeneity, is preferred and has a positive influence on team stability and performance (Byrne, 1971).

Like the similarity attraction paradigm, 'homophily' also gives weight to the argument that people most often like to be around those similar to them (McPherson *et al.*, 2001). According to this principle, a team can be formed through three different processes: a) people with the same social identity, so the people think in the same or similar manner; b) people with physical similarities, which leads people to develop a level of attraction; and c) recruitment of colleagues, which enhances loyalty (Ruef *et al.*, 2009). This homogeneous tendency in terms of thinking, attraction and loyalty provokes an automatically trusting environment, which is highly desirable in an entrepreneurial effort (Hellerstedt and Aldrich, 2008). As a result, individuals tend to form an entrepreneurial team with people with whom they share characteristics, aiming to reduce their level of stress and anxiety (Foo, 2011).

The principle of homophily states that people who are alike are more prone to starting a new business together due to the feeling of familiarity (McPherson *et al.*, 2001), which has also been used to explain team formation (Hinds *et al.*, 2000; Ruef *et al.*, 2003). As Aldrich and Kim (2007) state, "the principle of familiarity asserts that people who associate with one another, under certain conditions, become more likely to continue the association subsequently in other circumstances" (p.13). This tendency is strengthened if the previous experience with that person (family, friend, or colleague) led to positive results (Hinds *et al.*, 2000). This approach appeals to physical proximity and social relationships (e.g. friendship or family) instead of instrumental reasons to form a team. In this sense, NET formation and composition is influenced by the nature of the interaction of the team members (Schjoedt *et al.*, 2013), which relates to low levels of uncertainty perception as team members already know what to expect.

Vogel et al. (2014) again considered similarity/attraction theories and a cognitive resource perspective. By using the first, they supported previous findings and found that similarities in demography increased communications abilities and knowledge transfer

between members. They concluded that those similarities increase the level of adaptation, which may help people to work more efficiently and therefore obtain better results. Thanks to this chain of benefits, Vogel et al. (2014) found that the new venture have more possibilities to get financial resources than heterogeneous teams, because potential investors may perceive them as a more stable entrepreneurial effort. Yet, the authors also stressed that homogeneous compositions come with some disadvantages such as the risk of falling into 'learning traps'. Teams falling into this situation lose their ability to think diversely because the team members begin to think in a very similar manner (Byrne, 1971; Horwitz, 2005; Horwitz and Horwitz, 2007).

Cognitive resource perspective, belonging to the field of management, suggests that team heterogeneity provides significant operational synergies thanks to the diverse characteristics and attributes that each member adds to the team. This heterogeneous situation, where team members have different perspectives and experiences to share, enables the co-existence of contrasting ways of thinking. As a result, discussion among team members is often more vibrant and enriching, which improves the overall creativity of the team (Vogel *et al.*, 2014). This is important, since creativity can serve as a valuable resource that facilitates original thinking, an essential skill for any NET that is likely to encounter a wide variety of unexpected events during its entrepreneurial journey.

External evaluators also appreciate the benefits of heterogeneous team composition. Just as homogeneous teams can attract financial backing due to their perceived stability, heterogeneous teams can also attract financial resources by dint of their diversity of visions and profiles (Vogel *et al.*, 2014). However, this assertion can be a little misleading due to the propensity for team conflict (Foo *et al.*, 2005). Heterogeneity has also been linked to difficulties such as tension and the need for coordination, which can cause dysfunctional team interactions (Amason *et al.*, 2006). Still, this type of team possesses divergent interests that can increase the knowledge base of the new venture. Therefore, heterogeneity is thought to be beneficial as long as it does not interfere with the interaction and coexistence of the team. It should not prevent the pursuit of shared goals and objectives (Foo, 2011), which leads the team to a careful selection and recruitment process of new members.

Both heterogeneous and homogenous compositions can be double-edged swords. For instance, heterogeneity can improve the outcomes for the team because this type of composition adds fresh and diverse points of view. This diversity can complement each other's weaknesses and fortify the whole team (Knockaert *et al.*, 2011). However, when the team is heterogeneous, conflict might increase, and the decision-making process could take more time. It could be harder for heterogeneous teams to swiftly take advantage of any emergent opportunity. In contrast, homogenous teams tend to avoid internal conflict because the members share the same characteristics or attributes, and so the time required for making decisions will be shorter (Horwitz, 2005). While the homogeneity of a NET often means that these teams have a less diverse pot of information, skills, contacts, and networks to delve into, there is no problem with frequent interaction among team members (Amason *et al.*, 2006). Because both team compositions (heterogeneous and homogeneous) have their positives and negatives, the debate regarding which is the most appropriate for NET composition continues (Ruef *et al.*, 2009).

Some authors have not taken sides and prefer to consider both (Amason *et al.,* 2006; Schjoedt *et al.,* 2009; Vogel *et al.,* 2014). From this viewpoint, NETs should either consider being heterogeneous or homogeneous depending on the demands of the environment (Schjoedt *et al.*, 2009). For instance, Amason *et al.* (2006) analysed team heterogeneity in 174 high-potential new ventures between 1983 and 1988. Heterogeneity was measured through age, level of education, specialisation of education and functional background. The authors wanted to determine if team heterogeneity had any effect on business creation. One of the main findings was that homogeneous composition was preferable in the early stages of business creation to ensure its survival in the short-term (Amason *et al.*, 2006).

The previous argument juxtaposes with Steffens *et. al.*'s (2012) findings that indicated short-term performance was not affected by whether teams were homogeneous or heterogeneous. They studied new venture team formation to identify to what extent teams were characterised by demographic and human capital homogeneity. To do so, they used the Swedish PSED data set. The findings revealed no clear support for homogeneous compositions in the short-term, but did not discard the possibility that the

results might vary to previous research because of the type of venture under study (Steffens *et al.*, 2012). Lastly, Steffens *et al.* (2012) also concluded that a heterogeneous composition might be more beneficial in the long term in order to better adapt to other demands and requirements.

Moreover, Horwitz (2005) investigated the effect of composition in relation to performance. In his theoretical review, the author concluded that team random diversity will not increase the effectiveness, but the right composition of individual attributes will. Thus, effectiveness depends on the advantages accomplished through integration and cohesion of the different individuals.

The previous review and discussion is illustrated in Figure 3.1. NET can be formed in two ways: a) by relying on people with whom they share similarities, or b) by appealing to more objective purposes, such as complementarity of skills. This leads to the creation of teams with different degrees of diversity. Not forgetting that, homophily have also encountered familiarity as another determining factor when forming a NET. As a result, heterogeneous and homogeneous compositions and close relationships encumber different positive benefits and risk factors.

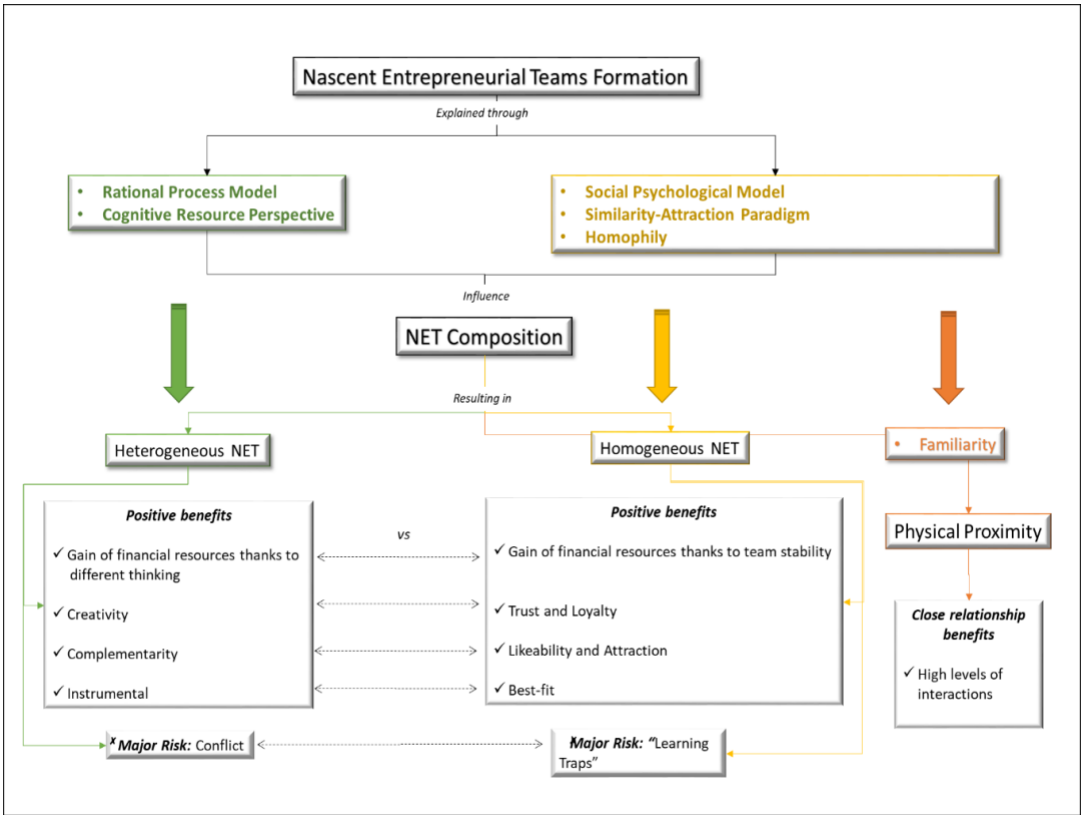


Figure 3.1 NET formations and composition theoretical framework

3.3 NET compositional constructs

In the search for the best NET constructs, scholars have focused on various compositional measures. For instance, Coad and Timmermans (2014) analysed 3,777 entrepreneurial pairs to investigate how team composition affects performance. This study represents an effort to analyse team composition based on diversity, a term that can be used interchangeably with heterogeneity, according to Harrison and Klein (2007). However, Coad and Timmerman's (2014) investigation was performed solely on pairs, which limits the potential findings on NET composition, as larger teams seems to have better chances to succeed (Eisenhardt, 2013) (as mentioned in section 2.6.1).

Studies on entrepreneurial team composition generally (not necessarily in the nascent stage) have mostly been performed by using one or two constructs, such as human capital, demographic diversity, or social networks (Amason *et al.*, 2006; Lichtenstein *et al.*, 2007; Newbert and Tornikoski, 2013). Coad and Timmermans (2014) used human capital and demographic diversity, and they compared their study with others that have used the same constructs. They identified only one out of twelve studies that considered four different variables (i.e. gender, education, experience and functional background) to

measure team diversity (see Table 3.1).

Table 3.1 Studies on entrepreneurial teams' diversity

Study	*Dependent Variable*	*Teams*	*Age*	*Gender*	*Education*	*Experience*	*Functional Background*	*Skill Composition*
Amason *et al.* (2006)	Sales growth (LN/HN)†	174	ns (–/+)		ns (ns/–)		ns (ns/–)	
	Profitability (LN/HN)†		ns (ns/–)		ns (ns/–)		ns (ns/–)	
	Market Performance (LN/HN)†		ns (ns/–)		ns (ns/–)		ns (ns/–)	
Beckman (2006)	Exploration strategy	170						+
	Exploitation strategy							ns
	Speed to market							ns
	Firm growth							+
Beckman *et al.* (2007)	Ability to attract VC	161						+
	Succeed an IPO							+
Chandler *et al.* (2004)	Entry of team members	124		ns	+	+	+	
	Exit of team members			ns	ns	+	ns	
Chowdhury (2005)	Team effectiveness	79	ns	ns			ns	
Clarysse *et al.* (2007)	Team member addition	140					ns	
Eisenhardt and Schoonhoven (1990)	Organizational growth	92				+		
Ensley *et al.* (1998)	Sales growth	88						–
	Profitability							ns
	Revenues							–
Foo *et al.* (2005)	External evaluation of ideas	154	–	ns	+			
Steffens *et al.* (2011)	Short term performance	202	ns	ns				
	Long run performance		+	ns				
Ucbasaran *et al.* (2003)	Entry of team members	92					ns	
	Exit of team members						ns	
Vanaelst *et al.* (2006)	Team development‡	10			(.)			(.)
Watson *et al.* (2003)	Profit	175			ns	ns		
	Growth				ns	ns		

We only report the most common demographic and human capital dependent variables. Other measures used but not included in the table are diversity in religious and political background, and various constructs, e.g.: conflict, task related diversity, non-task related diversity etc.
†LN = low novelty, HN = high novelty.
‡case study.

Source: (Coad and Timmermans, 2014, p.120)

Jin *et al.* (2016) conducted a meta-analysis to identify studies that relate to team composition and new venture performance. Their study shows that team diversity can be analysed through aggregate characteristics or by more proper and accurate heterogeneity measures. After discarding the investigations that used aggregate measures, Figure 3.2 shows the number of articles that used different heterogeneity measures.[3] As can be seen, the variables used can be grouped in two constructs: human capital and demographic diversity.

[3] Appendix 2 illustrates the information in more detail regarding the 21 articles that used proper diversity measurements.

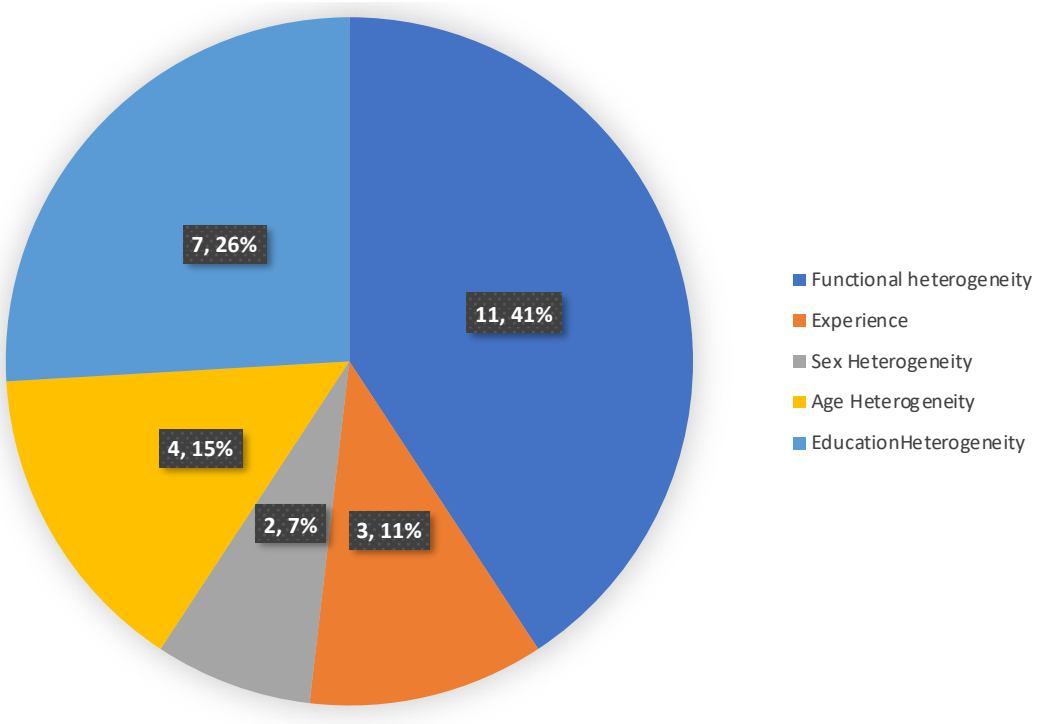


Figure 3.2 Amount of articles that used heterogeneity measures to study team composition based on Jin *et al.* (2016, pp.10-13)

By analysing the existing publications reported by the PSED (see Figure 3.3), only about 8% of the current publications are focused on NETs (13 out of 155) (see Figure 3.4), and only 3% are entirely dedicated to NET composition (i.e. 5 articles).[4] Consistent with the results reported by Jin *et al.* (2016), these studies used demographic diversity and human capital constructs to analyse NET composition. Some scholars have also reported other constructs such as social network, resource heterogeneity and the effect of familiarity (Aldrich and Kim, 2007; Samuelsson and Davidsson, 2009; Yusuf, 2012; Muñoz-Bullon *et al.,* 2015). The first studies were by Samuelsson and Davidsson (2009) and by Yusuf (2012). However, PSED II does not contain some of the variables that were present in PSED I, making social network difficult to calculate. The second, resource heterogeneity, has been studied only by Muñoz-Bullon *et al.* (2015). The consideration of resource heterogeneity in this study is appropriate given the tendency to start a team with people who enable access to resources for the start-up (Muñoz-Bullon *et al.*, 2015). In this sense, team member selection or preferences are expected to be entirely for instrumental purposes. Therefore, starting a team might be based on the variety of resources that each member of the team can provide to this venture.

[4] For more detail see Appendix 3.

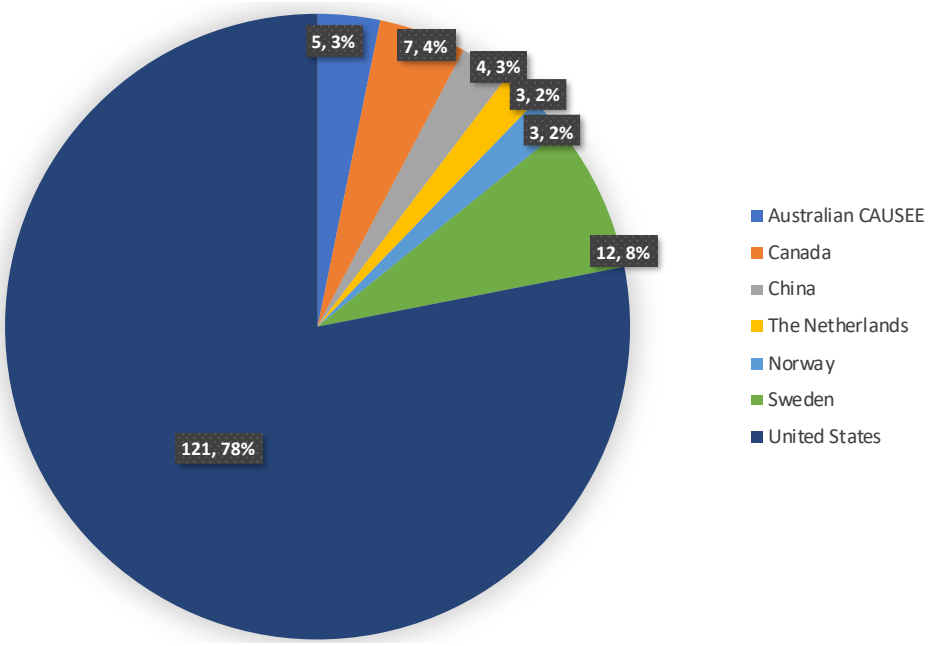


Figure 3.3 Publications based on the PSED or the international counterpart studies

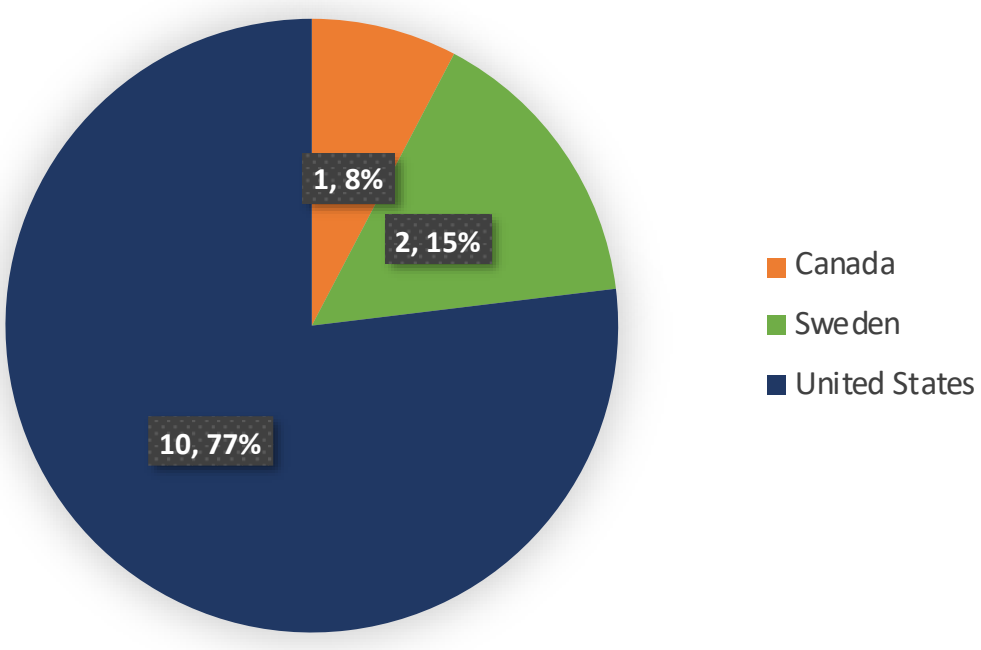


Figure 3.4 Publications that investigated NETs

Familiarity was studied by Brannon *et al.* (2013) and Ruef *et al.* (2003). Brannon *et al.* (2013) used it to differentiate between teams that were family efforts, mostly copreneurs (husband and wife), from non-family efforts. Ruef *et al.* (2003) framed familiarity under the lenses of social networks, arguing that pre-existing ties influence what they called 'founding team structures'. Thus, teams are likely to be formed of people who have had

previous interactions. This compositional construct is interesting to observe, as it has not been widely researched in this particular framework, but it has a clear influence in the decision-making process of team member selection (Schjoedt *et al.*, 2013). Following similarity attraction and homophily principles, this construct helps to capture how people want to feel comfortable and safe when starting a team. Therefore, individuals prefer to work with people who they already know and trust, i.e. family, friends, and, colleagues (Francis and Sandberg, 2000; Hinds *et al.*, 2000; Ruef, 2010).

Some scholars have highlighted the necessity for more multi-variable studies (Carter *et al.*, 1996; Vyakarnam *et al.*, 1999; Klotz *et al.*, 2014). Studying teams' composition or characteristics from different constructs leads to the identification of what make these individuals special or distinct when they are part of a team. This distinction might be the product of the complementarity of roles between the members of the team as distinguished by Jones and Li (2017) when studying the start-up case *Jazooli*. The study revealed that the two brothers were able to create a business opportunity rather than looking for one thanks to the different characteristics and attributes that each brother possessed (Jones and Li, 2017). Therefore, one of the major concerns as stressed by Klotz *et al.* (2014) is to understand which 'ingredients' are required to produce the emergence of a firm, as there are compositional factors that make an entrepreneur engage, persist and succeed in the entrepreneurial activity (Davidsson and Gordon, 2009).

In order to reach a more holistic understanding of the effect of composition in successfully creating a new business, this thesis aims to study NET composition using four compositional constructs: demographic diversity, human capital, resource heterogeneity, and familiarity. The thesis investigates the compositional constructs in isolation, then it examines the potential relationship between them before, lastly, pursuing a typological approach.

3.3.1 Demographic diversity

Demographic characteristics are those that are present from birth such as gender, race or ethnicity, and age (Steffens *et al.*, 2012). The impact of demographic characteristics on entrepreneurial efforts has been studied by scholars who have analysed the effect of one or more characteristics from this construct and used them either as an independent or

control variable (Liao and Gartner, 2006; Hellerstedt and Aldrich, 2008). These surface-level characteristics define tendencies related to team composition (heterogeneous or homogeneous). According to the homophily and similarity-attraction approaches, people tend to start a new venture with people whom they trust, like, know or share something in common (Foo, 2011). The easiest way to identify those shared similarities is through observable characteristics such as gender, age and ethnicity. Even in cases where team members share broadly similar demographics, it is still possible to observe certain levels of heterogeneity that may lead to conflict (Ensley and Hmieleski, 2005; Marlow and McAdam, 2013). However, according to literature, NETs are more likely to be homogeneous in terms of surface-level characteristics (Steffens *et al.*, 2012).

Gender has been shown to be a factor that influences a person's decision to become an entrepreneur and, therefore, alters the team composition. Gupta *et al.* (2009) undertook studies in India, Turkey and the US, and found that gender should be analysed beyond the simplistic consideration of sex at the time of birth as female or male. The self-conception of each individual alters their likelihood of engaging in entrepreneurial activity. Santos *et al.* (2016) supported this, claiming that women are not born with lower entrepreneurial intentions than men. Rather, they perceive the entrepreneurial role as being less suitable for them. This means that women may prefer another path to build a professional career before pursuing an entrepreneurial career.

Men and women show different behaviours. Women are more open to acknowledge that each person can possesses entrepreneurial attributes or capacities, regardless of gender, while men are more likely to show favouritism to men (Gupta *et al.*, 2009; Marlow and McAdam, 2013). Ruef *et al.* (2009) argue that all-male entrepreneurial teams are led by a gender homophily tendency, whereas all-female entrepreneurial teams are more open to gender-diversity as their entrepreneurial activity progresses. Furthermore, the tendency to form an all-male NET may be related to the lack of support that women receive. It is assumed that women are deterred from participating in entrepreneurial activities due to the widespread acceptance of the hegemonic perception of entrepreneurship being a 'male only' activity. That is to say, some sources of emotional support such as family members, and resource supporters such as suppliers or customers, may not associate entrepreneurship with women (Gupta *et al.*, 2009). Women also face financial and legal

constraints in comparison to their male counterparts in the course of starting a new business (Caliendo *et al.*, 2015). These results suggest that unfortunately the stereotypes perpetuated by societies around the world (despite the best efforts of modern economies to change them) have resulted in characterising the entrepreneurial activity as a masculine field. Thus, following the homophily and similarity attraction approach, most teams are more likely to be gender-homogeneous.

After gender, another important demographic factor to consider is age. In terms of team composition, age has been found to influence performance in both positive and negative ways (Horwitz, 2005; Foo, 20011; Steffens *et al.,* 2012). For instance, Foo's (2011) findings demonstrate that diversity can increase team effectiveness given the combination of older people with more mature opinions and the fresh insights of younger individuals. It is also more likely that team members have similar goals, aims and mind-sets if there is less of a intergeneration gap between them, or if it is close enough to conciliate a good relationship (Tsui *et al.*, 1992; Horwitz, 2005). For example, it can be more difficult to build a relationship between someone in their fifties and someone in their twenties because the range of vision and opportunity detection of each individual may vary greatly (Steffens *et al.*, 2012). Thus, it seems that NETs are more likely to be driven by homophily and similarity attraction tendencies as individuals are more likely to form a team with people of the same age, or where the age gap is small.

Lastly, ethnicity has been found to be an important factor for team formation and is strongly homogeneous (Ruef *et al.*, 2003). Kim and Aldrich (2006) further found that ethnically homogeneous teams occurred at a rate that was 27 times expectations. Previous studies have shown that if the team is composed mainly of one ethnic group, it is unlikely that a member from a different ethnicity would join or stay in the team unless they are deeply embedded (McPherson *et al.*, 2001). In such a case, there are more cases of African American nascent entrepreneurs abandoning their entrepreneurial attempts when they were part of a mixed-ethnic team, than when they belonged to a homogeneous one (McPherson *et al.*, 2001) As with gender and age, NET are more likely to benefit an ethnically homogeneous composition which may help to avoid problems with intra-team communication (Vogel *et al.*, 2014).

3.3.2 Human capital

Human capital (HC) refers to the intangible resources that each team member brings when beginning an entrepreneurial effort (Aldrich and Martinez, 2001; Ruef *et al.,* 2003; Steffens *et al.,* 2012). This is important because "the transformation of an idea into an organisation requires that entrepreneurs acquire resources" (Aldrich and Martinez, 2001, p.9). Such resources, according to the resource based view (RBV) (Barney *et al.*, 2001), can be identified as physical capital resources, human capital resources and organisational capital resources. Human capital has been defined by Aldrich and Martinez (2001) as the "amount of knowledge that can be obtained by formal education, previous experience, or informal training" (p. 10). As this research is studying teams, each member of the NET adds different individual knowledge, personal experience, education and training to the founding effort (Davidsson and Honig, 2003; Coad and Timmermans, 2014).

Authors have turned their attention to how HC affects team composition. Jayawarna *et al.* (2014a), for instance, found that graduates in the UK had less intention of starting a business compared to non-graduates. The analysis, using the National Child Development Study (NCDS), showed a clear negative relationship between how HC develops through the different early stages of human life and the potential entrepreneurs. One way to explain Jayawarna *et al.*'s (2014a) finding is that graduates, by virtue of their education, may perceive themselves to be destined for success and a comfortable lifestyle in the future, and so they have less of an impetus to endure the hardships of entrepreneurial activity.

However, not all studies theorise higher education as the antithesis of entrepreneurial activity. For example, Ensley and Hmieleski (2005) explicitly recognised that universities can be a fruitful environment for entrepreneurship by comparing university-based start-ups with independent start-ups. Their study revealed that being in a university-based environment is stimulating and allows to gain experience from others through incubator programmes. In such cases, entrepreneurs can build a social network with other students, lecturers and staff that can be helpful when founding a business. However, Ensley and Hmieleski (2005) also highlighted that independent teams have better probabilities to build a fruitful relationship among members. Therefore, while university-based start-ups

have incubators or experts to provide advice in terms of technology or product development, they do not provide support for team building. The study concluded that teams would likely be composed homogeneously rather than heterogeneously regardless of the type of start-up (university-based or not) given the preference towards similar individuals. (Ensley and Hmieleski, 2005; Liao and Welsch, 2008).

Previous research suggest that teams should be cautious of the human capital of prospective team members before selecting them to work in a NET (Horwitz and Horwitz, 2007). However, the HC level within the NET not only depends on effective recruitment, but also on the potential team member's willingness to be part of the effort. Jayawarna *et al.* (2014b) analysed a total of 18 waves of information of a panel data-set (the British Household Panel Survey) to determine which variables have a positive influence on the selection of business start-up as a career. By performing random effect logistic regression modelling, they found that work experience is the only significant determinant to business founding. This means that, even though the team may find and want to recruit a prospective team member with high academic qualifications and training, this person may not be interested in becoming part of an entrepreneurial endeavour. Instead, they may be more interested in being part of a corporation.

HC when studied by education and experience has shown to have an influence on NET composition. Therefore, Hellerstedt and Aldrich (2008) studied 1,214 entrepreneurial teams in Sweden, and found that the teams were mainly education-homogeneous. One potential explanation is that people try to get along with others with similar level of education (McPherson *et al.*, 2001) and as a result feel more comfortable, especially in the presence of weak-ties relationships (e.g. colleagues). Any significant differences between team members can become a source of conflict, and this appears to be no different when considering level of education. However, when thinking of family businesses, the level of education is not that problematic because team members are more concerned about the relationship rather than the certification or disparity of knowledge (Hellerstedt and Aldrich, 2008; Schjoedt *et al.*, 2009). Still, a preference exists for team members to be with others with the same level of education to boost cohesiveness and reduce conflict.

Apart from education, experience is also used as a proxy to measure HC. Currently, it can

be evaluated from three different angles: a) Prior entrepreneurial experience, people who have been previously involved in founding a business; b) industry experience, people with knowledge related to the same industry in which the start-up firm operates; and c) managerial or work experience, which is experience in any other aspect of organising activities (Van Gelderen *et al.*, 2006). This thesis focusses on the first two, as they are closely related to the entrepreneurial process.

A team with previous start-up experience have demonstrated to help gaining access to financial support, and also to administer the rest of the business resources in a more efficient way (Lamont, 1972). However, team members with high levels of start-up experience are related to lower entrepreneurial commitment, possibly because these team members have already experienced the 'entrepreneurial dream' (Steffens *et al.*, 2012). To this, Cassar (2014) and Steffens *et al.* (2012) argued that NETs with similar degree of previous experience in the industry or in starting a business lead to group cohesiveness where everyone is going to learn at the same pace. Thus, by having a HC-homogeneous composition, NETs are more likely to avoid any feelings of frustration and potential conflicts as everyone share the same level of knowledge, experience and skills (Kim and Aldrich, 2006).

3.3.3 Resource heterogeneity

As mentioned in Section 3.2, team formation can be influenced either by instrumental or similarity factors. As a result, this research has also included consideration of resource heterogeneity. This particular construct has been widely perceived as being more instrumentally driven as individuals are likely to consider the resources that can be brought into the entrepreneurial effort before starting a team and pursuing an entrepreneurial career (Batjargal, 2000). Certainly, entrepreneurs require a certain amount of different resources to enable them to start, and thrive, in the start-up process (Reynolds, 1994). To do so, NET need to ensure that sufficient resources are available by the time the future business needs it. When referring to teams, it is more likely that the initial stock of resources is larger, and may therefore diminish the levels of uncertainty and risk (Aldrich and Martinez, 2001). As a result, the presence and availability of resources in the nascent entrepreneurial effort is a critical issue for success (Grossman *et al.*, 2012).

Theories such as the resource based view (RBV) (Barney, 1991), resource based theory (RBT) (Alvarez and Busenitz, 2001) or resource dependency (Forbes 2006) have tried to explain the role of resources in entrepreneurial activity and industry. The resource-based approach, for instance, is a theoretical perspective more concerned with reducing uncertainty through resources, regardless of the status of the individual (Alvarez and Busenitz, 2001). Social capital (SC) theory emphasises how the individual as part of the new venture increases the acquisition of resources (Forbes 2006). However, resource dependence theory first suggests an evaluation to determine whether the resources which team members bring to the team are valuable enough to outweigh the difficulty involved in having more team members (Forbes *et al.*, 2006). In contrast, SC prioritises the addition of resources rather than potential issues that might come with more team members. As the purpose of this research is to study NET composition and not the difficulty an extra member may cause, it draws on a social capital approach to build its arguments regarding resource heterogeneity.[5]

A definition of SC can be developed by consideration of social cohesion or network theory. Social cohesion is conceived as a social group where the individuals' ideal purpose is to belong to a certain group to get benefits from each member. In this case, NETs are individuals who join together to start a firm because they need support in every sense to make the activity possible (Kawachi *et al.*, 2008). Social capital can also be defined in terms of the resources (e.g. information and social support) that are embedded into each team member's social network (Carpiano, 2006; Kawachi *et al.*, 2008; Lin, 2008). Thus, the presence or lack of resources according to a network-based definition of social capital rely on how effective those networks are (Grossman *et al.*, 2012).

The network-based theory of social capital also highlights the importance of intensity and reciprocity in social relations. SC has two purposes: instrumental or expressive. The instrumental purpose concerns the initial endowment of resources and procurement, whereas the expressive view is focused on the stability of those resources or perseveration through binding or bonding[6] relations (Lin, 2008). The two purposes may

[5] Resource heterogeneity was first examined by Barney (1991).
[6] According to Lin (2008) binding refers to ties that engage in reciprocal and intense interactions – strong ties in a dense network (e.g., kin and confidants) - whereas bonding is the term used to typify most social networks with a mixture of stronger and weaker ties or direct and indirect ties.

differ in terms of effectiveness depending on the different layers of social relations. Lin (2008) identified three layers: inner, intermediary, and outer. The inner layer, as its name suggests, includes ties where people share deep feelings, such as family and friends. This layer is more intimate; however, the resources could be quite homogeneous or poor as this type of relation leads to more homophily. In such a scenario, the existence of similar resources is not unexpected. It is very common to find that team members of family businesses have similar resources. For example, in the case of copreneurs, the probability of having redundant resources from the husband and wife is considerably higher in comparison to teams that are formed by strangers (Brannon *et al.*, 2013). Lin (2008) argues that "when additional or better resources are needed, in the case of instrumental actions, then the utility of inner layers is contingent on how rich or varied resources are among the ties" (p. 14). The outer layer considers those relationships where the intensity is lower, and therefore the density of the network decreases. In such a case, the resources embedded in the team members are more likely to be diverse or heterogeneous.

Kawachi *et al.* (2008) concluded that the network-based approach allows the study of social capital from an individual level. In this individualistic view, social capital has been conceptualised as the value of resources that each individual can access through their social networks. Batjargal (2000) explains that the resource dimension of SC is concerned with the degree to which the network is valuable depending on the instrumental resources it can provide. Thus, Aldrich and Martinez (2001) pointed out that "entrepreneurs also develop social networks to gain access to information, knowledge, financial capital and other resources that they do not possess" (p. 10). This has underscored the need to study the effect of resources on entrepreneurial activity (Muñoz-Bullon *et al.*, 2015).

Translating this to the particular context of nascence, these entrepreneurial efforts face a challenging scenario in terms of seeking resources. According to Grossman *et al.* (2012), they need to possess sufficient ability to acquire and manage resources without previous acknowledgement of what may happen. The nascent entrepreneurs do not know for certain what type of resources they may need in the future, or what will better suit the start-up as it grows. However, NETs possess an advantage by having more than one individual providing access to resources, which means more support to the new business

(Muñoz-Bullon *et al.*, 2015). Therefore, team members become valuable as they are in a position to provide their own resources or those resources that can only be accessible through them.

When considering resource accumulation, it may be tempting to think 'the more, the merrier'. However, an examination of the relevant literature suggests this is not always the case. Some studies have indicated that resource accumulation can be detrimental rather than helpful as the business may need a different type of resource from the one they business vastly possess (Stevenson and Gumpert, 1985; Forbes *et al.*, 2006). It has also been highlighted that the diversity of resources in the early stages of the entrepreneurial effort is critical given its early stage of development (Aldrich and Martinez, 2001). So critical is resource diversity considered to be, that some researchers have focused their entire attention on trying to understand its effects and have suggested that the heterogeneity of resources can constrain or empower the chances of success in any instrumental human action, in this case new business creation (Batjargal, 2000). Therefore, this research adopts the view that a NET is formed by individuals in position to contribute with unique and diverse resources to the start-up effort.

Kamm and Nurick (1993) argue that individuals decide to stick with others who can help them supply resources. These authors have emphasised that teams are more likely to succeed in their task (which involves seeking diverse resources), making these partners or team members necessary and essential. A thorough examination of the current literature indicates that diversity of resources is addressed in a number of ways. Two of the most prominent are resource multiplexity (Grossman *et al.*, 2012) and resource heterogeneity (Muñoz-Bullon *et al.*, 2015). The first considers resource diversity through the concept 'resource multiplexity' focused on dyad teams, whereas the second study, which used the term 'resource heterogeneity', analysed larger NETs. Both studies found that the diversity and not the amount of resources is positively associated with the perceived value of the contact or, in this context, the team member (Grossman *et al.*, 2012, p.1765).

An entrepreneurial effort requires different resources, including information or advice from external sources, specialised training, and access to financial or physical resources. Nascent entrepreneurs prefer to avoid struggling with limitations or constraints due to

the lack of resources and are likely to start a team with people who have access to different and key resources that otherwise would be difficult or impossible to acquire (Elfring and Hulsink, 2007). Thus, this thesis is using the term 'resource heterogeneity' to identify the number of contributions within the team that are not repeated, and are therefore valuable and unique (Barney, 1991; Muñoz-Bullon *et al.*, 2015).

3.3.4 Familiarity

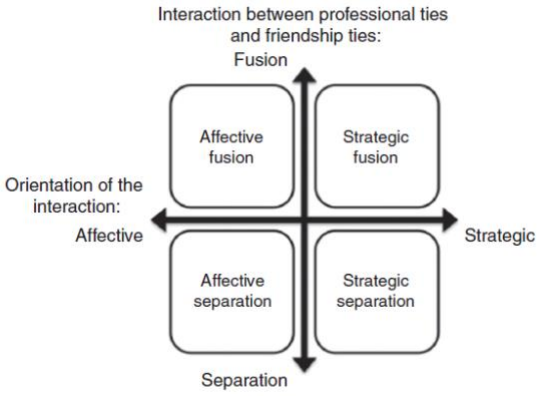
This compositional construct considers how people start a team with others with whom they have a previous established relationship. This is supported by Hinds *et al.* (2000) who analysed team composition based on three principles: familiarity, homophily and reputation. The authors concluded that individuals prefer to go for 'the sure thing' (people they already know) to start a team, rather than total strangers. Certainly, an existent relationship between two individuals can affect the decision-making process when forming a team. Therefore, studies have considered different types of relationships or categories to capture such an effect. For instance, Schjoedt *et al.* (2013) studied team composition based on couples, biologically related family members, and unrelated individuals, while Aldrich and Kim (2007) identified three circles for team member selection: "the family, others known personally to the lead founder or core founders, and strangers" (p. 13). The different relationships that can be identified from these studies are family (couples and biological related), friends, colleagues, ex-co-workers, and total strangers. These relationships are briefly discussed in this section.

Family members have appeared to be the most proximal and logical option when starting a NET. Entrepreneurial teams based on the family have been widely discussed in the literature (Brannon *et al.*, 2013; Discua Cruz *et al.*, 2013; Michael-Tsabari *et al.*, 2014; Le Breton-Miller and Miller, 2015). Brannon *et al.* (2013), for example, observe the effect of family affiliation on entrepreneurial team performance using PSED. Even though their research reported positive results, the research also demonstrated that even in a family context the presence of couples varies the expected results. Yet, having family members in the team composition is no guarantee of good performance, absence of conflict or complete stability (Schjoedt *et al.*, 2013). Changes in the family structure that alter NET composition as a result of marriage, divorce, death or children growing up still happen. This dynamic structure can produce negative (e.g. disengagement from the

entrepreneurial activity) or positive (e.g. team member additions with fresh ideas) effects (Eddleston and Morgan, 2014). Nevertheless, it is expected that the strength of the emotional bond guarantees the resources needed for the business creation regardless of the changes in the family structure (Aldrich and Martinez, 2001; Gomez-Mejia *et al.*, 2011).

The role of friends is also relevant when studying NET composition as they represent a special but distinct (from family) type of relationship. Friendship can emerge in two different ways, one that emerges from private-life interaction, and the other that arises from previous or current work environment (Francis and Sandberg, 2000).

Meanwhile, eschewing a functionalist approach, D'hont *et al.* (2016) conducted a more subjective study to observe the effects of friendship and professional ties in entrepreneurship and analysed the strength of the relationship in entrepreneurs based on affective, normative, and personal dimensions. This allowed them to identify four different profiles, which they allocated to four quadrants depending the interaction among the individuals and the orientation of the interaction (see Figure 3.5). Their analysis concluded that, in the launch stage (nascent stage), instrumental and social motives are present in nascent team formation.



Source: (D'hont *et al.*, 2016, p.549)
Figure 3.5 A friendship-based typology of ETs

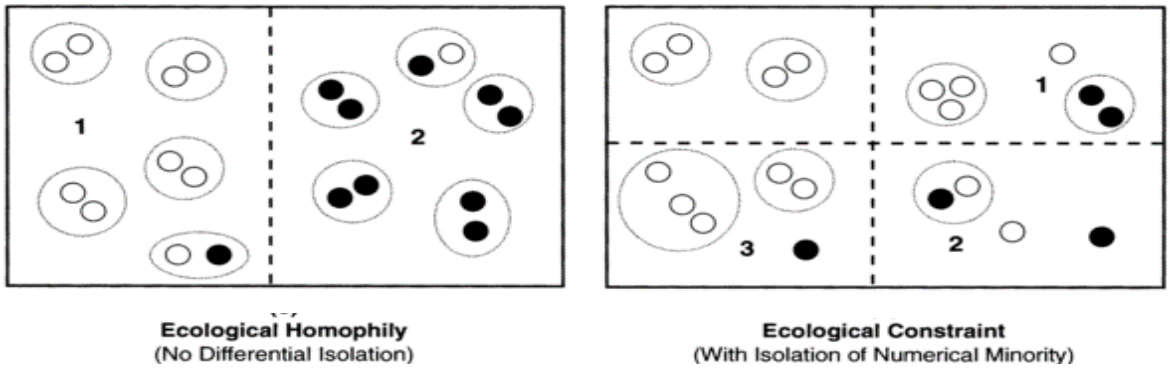
People joining together to start a team because they are family or friends could carry some consequences in other aspects of NET composition. For instance, teams formed by friends may be more prone to age- or education-homogeneous compositions as the friendship might have been established while studying. Homogeneous teams do provide more stability, but the lack of heterogeneity can damage the entrepreneurial activity

(Hinds *et al.*, 2000). However, Discua Cruz *et al.* (2013) explained that it is not necessarily safe to conclude that teams composed of close relations have no diversity at all. They explained that some team members (e.g. junior family members) are still developing their level of skills through training and experience and can thus bring new insights into the organisation.

Strangers can also appear as part of the team composition equation. Evidently, the existence of strangers within a team is driven by the cognitive resource perspective principle. Normally, the inclusion of strangers represents a way to strengthen the team in terms of experience, knowledge or skills (Aldrich and Kim, 2007). This need is observed in the family business literature when identifying how teams are formed when the family is involved. Corbetta and Salvato (2004), for example, identified a special type of family business team labelling it as 'open family firm'. They explained that sometimes the family business need to add external professionals into the effort either because of the resources these people may provide or the knowledge they have.

According to the familiarity principle, people are more prone to form a NET with those they already know, feel close to, and sense are trustworthy, but as Aldrich and Kim (2007) ask: "How far outside their immediate circle are founders prepared to go in building a team?" (p.13). This is something which needs to be captured in more detail when studying NET composition. Aldrich and Kim (2007) explained that familiarity can be studied by considering physical proximity. The effect of spatial or physical proximity has been studied by organisational ecologists and behavioural researchers. In an attempt to incorporate ecological studies into entrepreneurial team composition, Ruef *et al.* (2003) explain that some individuals are more likely to start a team because they find themselves isolated given the ecological constraints. They provided a graphical representation with two examples (see Figure 3.6). The first refers to gender segregation, suggesting that: "…because female entrepreneurs are far less common than male entrepreneurs, they may experience greater difficulty in finding other women with whom to start a business in their industry" (Ruef *et al.*, 2003, p.10). The second example considers the possibility of a numerical minority, increasing the probability of isolated entrepreneurial entities. The probability of some individuals getting together to form a NET decreases when they find themselves isolated due to the lack of spatial proximity altering the team composition

(Blau, 1977). Such lack of proximity may happen because people live far away from their relatives or because the people are unmarried or romantically unattached (Ruef *et al.*, 2009). These difficulties may serve to encourage solo-entrepreneurs, rather than team efforts.



Source: Ruef, Aldrich and Carter (Ruef *et al.*, 2003, p.201)

Figure 3.6 Patterns of Homophily and Isolation

It has been suggested that entrepreneurs rely on geographical proximity to develop social relations, or recruit co-founders (Sorenson and Audia, 2000; Stuart and Sorenson, 2003). In general, the studies have used type of industry, gender or geographical location to study such proximity, what Blau (1977) calls ecological constraint. However, this thesis is measuring physical proximity based on the type of relationship that the team member has reported and used familiarity to explain how the type of relationship and closeness influence NET composition and formation.

3.4 NET 'success'

Based on the four compositional constructs, NET composition appears to be either homogeneous or heterogeneous, and closely- or distantly-related. With this in mind, it is possible to describe NET composition in an explorative manner, determining what type of composition is more prevalent, the association or differentiation between the constructs, and even to propose a NET composition typology. Yet, this only helps to frame the theory towards the first two objectives of this thesis (see Chapter 1 section 1.2), so the definition of success must also be considered to address the third objective of this thesis.

As Schoonhoven *et al.* (2009) pointed out, "one of the challenges of organisational

scholarship is defining when an organisation begins to exist" (p. 219). Academics have managed other terminologies to measure the effects of composition in the nascent stage such as performance, firm birth, success, and outcomes in general. This thesis is using 'success' to capture this cause and effect relationship. However, the success status in this stage does not necessarily represent or guarantee that the start-up is stable. It just indicates that the team has reached a certain level of operation that, if it is constant, may enable the nascent business to move forward in the business life cycle.

According to the entrepreneurship literature, team composition plays a role in the nascent entrepreneurial success (Horwitz and Horwitz, 2007), but its effect is considered as an 'unresolved debate' given the lack of consensus on the factors studied and its operationalisation (Klotz *et al.*, 2014). DeSantola and Gulati (2017) highlighted this issue by explaining that the effect of the founding team's characteristics on start-up performance is still empirically incipient. Thus, this thesis seeks to clarify the inconclusive or contradictory current findings by considering the four compositional constructs and their effect on success.

Demographic diversity suggests that NET composition is more likely to be homogeneous. However, the effects of these demographics on success have been inconclusive until now. Steffens *et al.* (2012), for instance, found that gender-homogeneous or -heterogeneous composition has no effect at all, but age diversity is positively related to success. Moreover, Hellerstedt and Aldrich (2008) rejected ethnicity as an influential factor in team dynamics and its effect on success, and Freeland and Keister (2016) supported this assumption, adding that entrepreneurial success depends primarily on human capital, not on race or ethnicity. Nonetheless, they highlighted that ethnicity does have an influence on team members' persistence, revealing that:

> …whereas blacks were more than twice as likely to remain actively engaged compared with whites, Hispanics were three times as likely to disengage if success was not achieved after two years (Freeland and Keister, 2016, p.221).

Other scholars claim that there is a relationship between demographics and success. Chowdhury (2005) encouraged looking at demographics despite his negative findings as his results might have been the product of the context used for the investigation (i.e. high

technology firms). Vogel *et al.* (2014) argue that there is a positive relationship between these demographic diversity and success as long as the composition observed is heterogeneous. They claim that, regardless of the cohesiveness that homogeneous teams might offer, heterogeneous compositions are more necessary to succeed. Investigations have found that education, functional expertise, industry experience and business skills (human capital) are positively related to new business success (Ensley and Hmieleski, 2005; Schjoedt *et al.*, 2009). For instance, Horwitz and Horwitz (2007) found that HC-heterogeneous teams could expect better levels of performance, but that the effect of diversity on NET success may vary depending on the HC variable to be measured. Vogel et al. (2014) also found that the level of education and educational background benefit the team if there are high levels of diversity.

However, there are studies that demonstrate that HC does not have an effect on success. In this regard, Foo (2011) concluded that diversity in experience can lead to conflict in the execution of daily activities and decrease the effectiveness of the team. Moreover, Haber and Reichel (2007) observed the impact of human capital on two dimensions of entrepreneurial performance: short- and long-term performance, and objective and subjective measures. The authors found that HC in terms of experience or education did not have any influence on firm performance. However, they attributed this result to the type of industry (tourism) considered in the study. While tourism industries could face lesser barriers to entrepreneurial activity in terms of the experience or education needed, others such as technology-based industries require a higher experience and level of education to develop their business (Haber and Reichel, 2007).

During the entrepreneurial process it is safe to assume that achieving success requires an element of luck or good fortune. After all, it is nearly impossible to meticulously control all the variables involved to perfectly execute an entrepreneurial endeavour. Yet, it is not a satisfactory outcome for an entrepreneurship scholar to conclude that reliance on luck is key to success. Rather a reading of the literature suggests it is possible to shape luck by building networks, seeking investment and resources (bootstrapping), constantly growing, and continually monitoring performance (Winborg and Landström, 2001; Cuervo *et al.*, 2007; Jones and Jayawarna, 2010).

Previous discussions about resource diversity suggests that this luck can also be shaped

through careful team member selection that leads to a heterogeneous resource portfolio (resource heterogeneity). This is supported by Muñoz-Bullon *et al.* (2015) who concluded that "accessing heterogeneous resources is important for ensuring the new venture's emergence" (p. 98). They argued that succeeding in starting a new business is critical when expecting that one single member holds all the necessary resources. Thus, heterogeneous teams position nascent entrepreneurs in a more privileged situation in comparison to their counterparts (resource-homogeneous NET) where the resources provided are redundant. In such a case, high levels of resource heterogeneity come with advantages, such as extension of knowledge and contact with other people outside the NET, that can strengthen their likelihood to succeed (Forbes *et al.*, 2006).

Success in a NET is not only affected by their demographics, HC or resources, but also by the existing effective (or ineffective) relationships in the team. The close or distant relationship (familiarity) among members has been shown to have an effect on NET success and facilitates communication and a trustworthy environment. This is supported by Discua Cruz *et al.* (2013) who found that starting a businesses with family members benefits group cohesiveness, which facilitates the creation of businesses that can potentially be inherited by future generations.

Studies that have analysed other type of relationship, such as friendship, also discovered this to have a positive effect on nascent entrepreneurial efforts. For instance, D'hont *et al.* (2016), found that entrepreneurs were deeply connected to their friendship, so the business idea was easy to consolidate. They also found that when the relationship was weaker, the entrepreneur did not discard the option to be together to launch a business, but only under the caveat that it was convenient to do so. They observed that close or distant relations can be guided by instrumental or attraction approaches, yet both types are likely to help in the success of a newly created business.

All types of relationships – from married couples, to professional colleagues, or even strangers – appear to have an effect on nascent entrepreneurial success. However, copreneurs have been constantly evidenced to have a positive association with entrepreneurial success. For instance, Brannon *et al.* (2013) found that couples have shown high levels of flexibility, a crucial factor in coping with the merging of personal and professional lives that working as copreneurs necessitates. They further argued that

couples starting a business have better chances to succeed, as they are able to recognise each other's strengths and weaknesses. Intriguingly, their study also found that blood-related familial teams do not enjoy the same success. Brannon *et al.* (2013) concluded that, while couples are able to incur in a competitive advantage by developing a meta-identity, the others are more prone to conflict.

The current findings in team and nascent entrepreneurship literature make evident the unresolved debate of the effect that team composition has on nascent entrepreneurial outcomes. Therefore, measuring success in the nascent entrepreneurial context intricate the careful consideration of multiple dimensions (see Chapter 4, section 4.4.2).

3.5 Conceptual model

To fully understand NET composition and the relationship with success requires a theoretical explanation of how teams are formed. As illustrated in Figure 3.7, team formation can be explained by two complementary theoretical stances. The first explains how people form teams based on an instrumental or complementary basis. This tendency has been explained in the literature by utilising the rational process model and cognitive resource perspectives (Aldrich and Kim, 2007; Vogel *et al.*, 2014). In contrast, the other stance focuses on the shared similarities, levels of trust, and attraction. Theoretical explanation for these tendencies has been provided by social psychological models, the similarity-attraction paradigm, and homophily principles (Byrne, 1971; McPherson *et al.*, 2001; Foo, 2011).

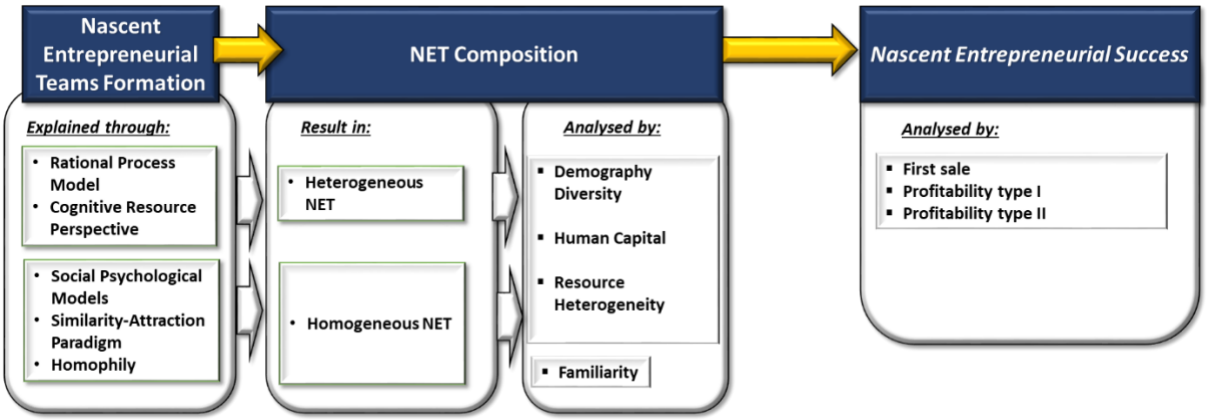


Figure 3.7 Conceptual model

According to these theories, homogeneous or heterogeneous NET compositions can be analysed quantitatively using the same measures because one is the antonym of the other (Harrison and Klein, 2007). However, this only applies for three of the constructs under study: demographic diversity, human capital and resource heterogeneity. Special consideration is needed when considering familiarity as it explains the tendency of individuals to form teams with those they already know. Therefore, this fourth construct is studied based on the type of relationship of the team members as a sign of the constant interaction and physical proximity.

Once NET formation and composition is studied, the effect of NET diversity and familiarity to nascent entrepreneurial success is analysed in order to test whether, by having the 'correct ingredients', the probability of success is higher and the likely implications. To do so, three dimensions of success are considered to study success: first sale, profitability type I (indicating firms whose monthly revenue exceeds the monthly expenses), and profitability type II (cases where the monthly revenue not only exceeds the monthly expenses but also includes the owners' salaries).

3.6 Identifying the gap

In chapter 2 and 3 the purpose was to narrow the scope of this thesis and to identify the gap to be addressed by examining the empirical data (see Figure 3.8). This thesis began by explaining the economic and social impacts of entrepreneurship (Schumpeter, 1934; Ács and Audretsch, 2006; Audretsch *et al.*, 2015) and the theoretical frameworks used to make sense of this phenomena (Gartner, 1985; Sarasvathy, 2001; Shane and Eckhardt, 2003; Baker and Nelson, 2005). Thereafter, the definition of the entrepreneur and differences between self-employment and small business owners were reviewed. This thesis narrowed its scope by focusing on entrepreneurs situated in the nascent stage according to Reynolds and Miller's (1992) business life cycle model (see section 2.5). The relevance of studying the nascent stage was highlighted because this is when entrepreneurs decide to start a business and concludes with the creation or the abandonment of the start-up (Rotefoss and Kolvereid, 2005; Hopp and Stephan, 2012).

Next, this thesis stressed that the entrepreneurial activity often resides in teams (Gartner *et al.*, 1994; Cooney, 2005), whose effort outperform solo/heroic entrepreneurs (Schjoedt

et al., 2009; Sonderegger, 2010; Zhou and Rosini, 2015). Therefore, this thesis investigates nascent entrepreneurship in its plural form: the team. As reviewed in section 3.2, NET formation and composition have been studied based on different theoretical approaches (Byrne, 1971; Bird, 1989; Aldrich and Kim, 2007). Yet, it was found that team composition at the nascent stage has not been researched in great depth (Klotz *et al.*, 2014; Jin *et al.*, 2016),

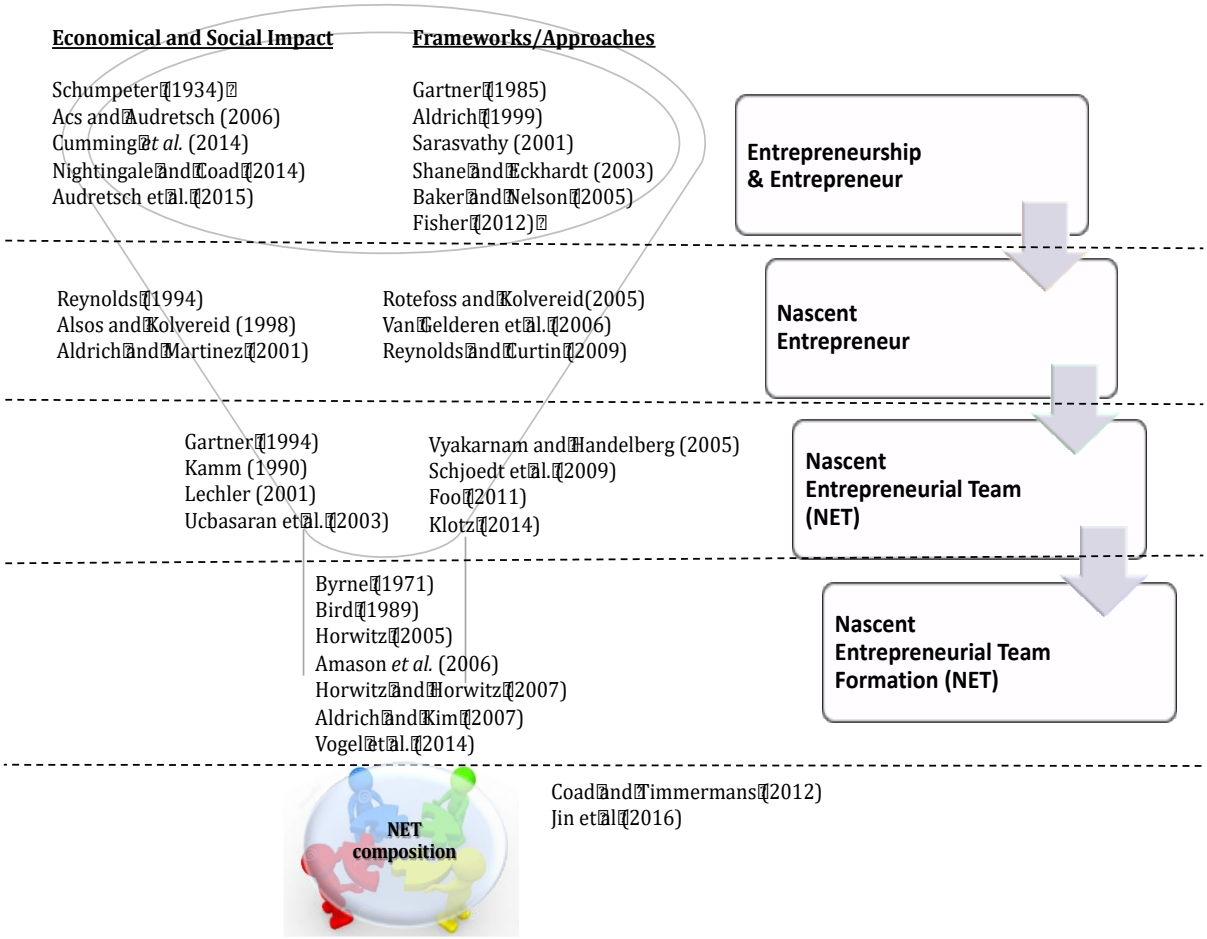


Figure 3.8 Narrowing down to NET composition

In addition, scholars have stressed the necessity of developing multi-variable studies to more effectively understand team composition and its effect on success (Vyakarnam *et al.*, 1999; Horwitz, 2005; Steffens *et al.*, 2012). Thus, this thesis studies nascent entrepreneurial team composition based on diversity and physical proximity criteria. After reviewing the team literature (see Figure 3.9), four constructs were identified as the most relevant to quantitatively explore NET composition: demographic diversity, human capital, resource heterogeneity, and familiarity.

As a result, this thesis aims to fill in the gap in entrepreneurship by identifying what NET are prevalent, the potential relationships between the compositional constructs, the profiles/types of NET when studying the four constructs simultaneously, and the effect the initial composition has on nascent entrepreneurial success.

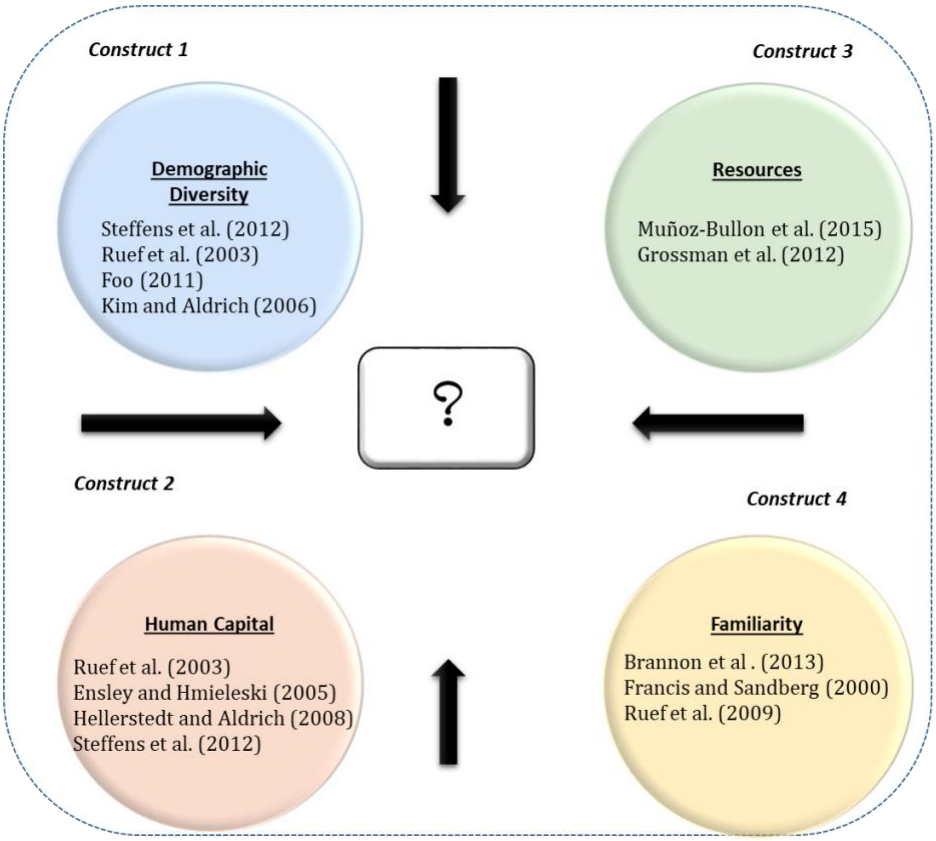


Figure 3.9 Gap identification diagram

3.7 Research questions

In light of the literature chapters and objectives, nascent entrepreneurial team (NET) composition is investigated by four compositional constructs: demographic diversity, human capital, resource diversity, and familiarity. These compositional constructs are investigated by the degree of diversity and physical proximity within the team. In doing so, this thesis seeks to answer the first research question:

What types of composition are prevalent in nascent entrepreneurial teams?

Previous research on team composition have argued that teams may undergo changes

as some members join and other drop the start-up over time (Hellerstedt and Aldrich, 2008; Ucbasaran *et al*., 2003). The team composition can also be influenced by the possible relationship between compositional constructs or if one construct influences the nature of team characteristics by another construct. Therefore, the first research question is complemented by the following sub-questions:

> *What compositional dynamics can be observed in the NET over time?*
>
> *How do the different compositional constructs used in this study (i.e. demographic diversity, human capital, resource heterogeneity and familiarity) relate to, or influence, each other?*

Some scholars have highlighted the need for more multi-variable studies when researching teams, in order to fully grasp and comprehend such phenomena (Vyakarnam *et al.*, 1999; Klotz *et al.*, 2014). In which case, it is possible to identify the compositional factors that make them engage, persist and succeed (Davidsson and Gordon, 2009; Klotz *et al.*, 2014). To address this gap, this thesis adopts a typological approach that enables the identification of tendencies and patterns of NET composition according to the four compositional constructs under study. By doing so, the thesis will examine the following research question:

> *What different team profiles or types can be identified among nascent entrepreneurial teams based on their compositional dimensions?*

Understanding NET composition is not sufficient, as it does not provide an answer to the main question of why some new ventures succeed while others fail (Amason *et al.*, 2006, p.125). This debate reminds academics in the field that heterogeneous and homogeneous compositions are a 'double-edged sword' (Klotz *et al.*, 2014). For instance, heterogeneity can improve the outcomes of the teams because they include fresh and diverse points of view. This diversity can fortify the whole team, as individuals possess different strengths (Knockaert *et al.*, 2011). However, when the team is heterogeneous, conflict can increase and the decision-making process could take more time, making it harder to take advantage of opportunities. By contrast, homogenous teams can counteract conflict because members share the same characteristics or attributes (Horwitz, 2005). They may struggle with information gathering, but there is no problem with frequent interaction and feelings of trust (Amason *et al.*, 2006). As Schoonhoven *et al.* (2009) highlighted,

studying team composition comes with its limitations due the lack of accuracy when measuring nascent entrepreneurial success. Therefore, this thesis considers not only one but three dimensions of success: first sale, profitability type I (indicating firms whose monthly revenue exceeds the monthly expenses), and profitability type II (cases where the monthly revenue not only exceeds the monthly expenses but also includes the owners' salaries). In doing so, it adds clarity to the current debate regarding success measurements when studying nascent entrepreneurial stage (Schoonhoven *et al.*, 2009). Thus, the third research question is as follows:

> *What effect does nascent entrepreneurial team composition have on nascent entrepreneurial success?*

To answer the three research questions, data were taken from the US Panel Study of Entrepreneurial Dynamics (PSED II), and an exploratory quantitative approach was adopted, given the scant body of literature on nascent entrepreneurial studies and team configurations. The analysis consisted of three phases. First, a descriptive analysis and Pearson chi-square, cross tabulations and t-test were conducted to study NET composition and the potential differences and associations between the four constructs (i.e. demographic diversity, human capital, resource heterogeneity, and familiarity). Second, a Cluster TwoStep analysis was carried out to identify profiles and types when considering the four constructs simultaneously. Third, multivariate analyses were performed to account for the effect of NET composition on firm success. The analyses consisted of logistic and multiple linear regression models. The purpose of logistic regression was to identify whether or not a particular dimension of success had been achieved. The purpose of the multiple linear regression was to measure the time taken for a team with a certain composition to reach a particular dimension of success.

3.8 Summary

Team composition can vary depending on individual preferences. For some people, it is more important that individuals match; others are more concerned about whether the other individual complements them. The literature review has shown how these preferences have been explained either by the similar-attraction paradigm and cognitive resource perspective theories(Byrne, 1971; Horwitz, 2005), or by rational process and social psychological models (Aldrich and Kim, 2007). In either case, the result is the

formation of a heterogeneous or homogeneous team. This dualistic conception comes with corresponding advantages and limitations.

Homogeneous teams, according to the homophily approach, are relatively easier to fall into as an individual (McPherson *et al.*, 2001; Foo, 2011). After all, humans tend to feel more comfortable surrounded by similar people (Byrne, 1971, Bird, 1989). However, one of the major downsides is that a homogeneous team may face the 'learning trap' (Vogel *et al.*, 2014). This means that having similar people in the team may lead to a certain degree of cognitive blindness through a paucity of diverse and creative thinking. However, heterogeneous teams also have their potential pitfalls. For instance, teams may be more prone to conflict that could even provoke the end of the relationship and the foundation process.

The entrepreneurship literature is bereft of studies that investigate the composition of NETs in terms of diversity or homophily. The consideration of what other researchers have called a 'constellation of variables' (Steffens *et al.*, 2012) also has the potential to enrich current thought about the relationship between team composition and its 'success' or 'exit'. Therefore, the consideration of four different compositional constructs (i.e. demographic diversity, human capital, resource heterogeneity and familiarity) provide significant results in terms of how the 'right' or 'wrong' composition increases or decreases the odds of 'success' from the start-up effort. Further, the consideration of three dimensions of success is an attempt to clarify the inconclusive current findings regarding the effect of NET composition on success. Lastly, the chapter presented the conceptual model and the gap to be filled in by the present thesis in the chapters to follow.

Chapter 4. Research Paradigm and Methods

4.1 Introduction

According to the literature, an entrepreneurial effort can be team-based, and different outcomes from teams of different compositions can be expected. With this in mind, the aim of this section is to discuss and establish the philosophical position and the methodological approach taken to study the assertions around NETs. To achieve this, the discussion is structured as follows:

1. **Research paradigm**, consisting of a brief explanation of the theoretical alternatives when approaching the entrepreneurial phenomenon and the research paradigm of this thesis;
2. **Method**, consisting of an explanation of the research design, the methods and the secondary data source, PSED II;
3. **Variable selection and operationalisation**, this research uses a number of dependent, independent and control variables. These variables take values directly from the data source or derived through combining data to create team level variables; and
4. **Analytical strategy**, which describes the techniques used for the descriptive and inferential analysis.

4.2 A positivist paradigm of entrepreneurship

A positivist position assumes that any phenomenon can be studied by using natural sciences methods. This paradigm posits the researcher as someone detached from the reality to be observed, becoming an 'external observer' (objective epistemology), and that the external reality is 'driven by immutable natural laws' (known as ontological realism) (Guba, 1990, p.19). Therefore, the researcher is trying to uncover or identify law-like generalisations that correspond to what was studied (Leitch *et al.*, 2009), which are subjected to approval or refutation using quantitative methods (Guba, 1990). By doing so, positivism leads to the formulation of general scientific statements that enriches the current spectrum of knowledge (Bryman, 2015).

Positivism, and post-positivism, have provided a philosophical approach that allows researchers to conceive and study reality in a scientific manner (Johnson and Duberley, 2000; Onwuegbuzie *et al.*, 2009). Both paradigms make it possible to use a quantitative approach, giving voice to 'disinterested scientist' concern to inform policy-makers, decision-makers, or society in general (Guba and Lincoln, 1994). Both paradigms share similar foundations in objectivity and empirical testing, yet while positivism exclusively considers the use of quantitative methods, post-positivism also considers applying qualitative tools. This second paradigm uses more sophisticated methods, that can imply or converge in a triangulation of methods or meta-analyses (Adam, 2014). There is no denying the usefulness of a pluralism of methods, but it can only strengthen the investigation, insofar as the experience and the ability of the researcher facilitates its successful execution (Jones, 1995). Unlike positivism, post-positivist considers *fallibilism*, which means that the reality can be known and studied but not with complete certainty (Bhattacherjee, 2012). Bhattacherjee (2012) explains that, even though the paradigm assumes an objective perspective, it is also subjective to a certain degree. Thus, the reality is independent of the researcher, but the knower can grasp such reality only in a probabilistic manner.

Positivism and post-positivism have enabled researchers to develop objective and quantitative studies in the entrepreneurial field (Davidsson and Gordon, 2009; Klotz *et al.,* 2014); however, according to Crotty (1998), the emergence of new paradigms (as a result of different schools of thought) has had an effect on how research is developed. Entrepreneurship has evolved alongside those paradigms and their historical, economic and sociological context (Fayolle *et al.*, 2005). Thus, research in this field has moved in different directions, either by adopting a positivist or an interpretativism approach (Fayolle *et al.*, 2005).

Burg and Romme (2014), for example, identified three different modes to engage in entrepreneurship research: the positivist, narrative and design modes. To distinguish them, the authors used Aristotle's intellectual virtues: episteme, techne and phronesis. Episteme is related to positivism, because its purpose is to uncover a general condition and patterns from empirical data. This mode establishes a hypothesis that is to be approved or refuted through inferential statistics and internal validity (Burg and Romme,

2014). As a result, it attempts to provide universal and scientific knowledge (Flyvbjerg, 2001). Phronesis is related to the narrative mode, which attempts to understand and portray the experiences and values of entrepreneurs in relation to the environment. The narrative mode draws on a constructivist[7] view of knowledge, relying on the researcher to 'tell the story'. Techne is related to the design mode that basically seeks to guide entrepreneurs and their stakeholders towards creating value. This intellectual virtue symbolises and reflects how the social sciences, in this case entrepreneurship, have been influenced by the natural or technical sciences (Flyvbjerg, 2001). Therefore, the knowledge in this mode is more pragmatic.

Among all the paradigms, the positivist approach has dominated the entrepreneurial field from its beginning to date (Klotz *et al.,* 2014). Grant and Perren (2002) found broad support for this statement from their meta-theoretical analysis. They explored which paradigms were more common and used in entrepreneurial studies based on Burrell and Morgan (1979) paradigm work.[8] The result of the analysis showed that functionalism[9] is the zeitgeist paradigm across the articles. This is unsurprising given that one of the major concerns about entrepreneurship is still to reach sufficient legitimacy (Leitch *et al.*, 2009).

There are calls for the adoption of more interpretative rooted paradigms on entrepreneurship to enrich the current knowledge in the field. It has also been suggested that researchers should seek the complementarities and positive side of each paradigm (Burg and Romme, 2014). However, there is undeniably wide recognition and acceptance of positivist studies on the topic. As Leitch *et al.* (2009) noted: "...the traditional and still dominant method of assessing quality in research is the theory-driven approach central

[7] This paradigm is rooted in interpretivism. This paradigm argues that objectivity is impossible. It further conceives that "it is the interaction between the inquirer and the inquired-into that shapes research" (Kirkwood and Campbell-Hunt, 2007, p.223).

[8] Burrel et al. (1979) used two paths (objective or subjective) to communicate knowledge and ideas as true or false. Further, they introduced `sociology of regulation´ and `sociology of radical change´ to build their model for the analysis of social theory. They identified four paradigms: functionalist, interpretative, radical structuralist, and radical humanist.

[9] Functionalist is rooted in positivism and is frequently used in the study of social phenomenon given the necessity to acquire validity and universal knowledge. Its focus is to give explanation to reality through empirical artefacts that can be analysed and studied thanks to quantitatively approaches (Burrel et al 1979).

to the 'scientific method'" (p. 72). This popularity relies on its objective study of the truth, characterised by internally and externally valid generalisations (Leitch *et al.*, 2009).

The positivist or functionalist paradigms are used predominantly by entrepreneurship scholars, providing objective, deductive and, to a certain extent, generalisable findings (Jennings *et al.*, 2005; Karatas-Ozkan *et al.*, 2014). Through the positivist approach, entrepreneurship has revealed reliable findings regarding survival, growth, performance, firm birth and success, related subjects under investigation in this research (Kirkwood and Campbell-Hunt, 2007). Thus, this research adopts a positivist paradigm that allows the researcher and the investigated 'object' – entrepreneurs that belong to a NET – to remain as independent entities. To do so, NETs are studied by four observable compositional constructs, and their effect on new business success, applying a set of standardised procedures (see section 4.5). At the same time, the quantitative methodology, accompanying the positivist paradigm, allows the identification and provision of a typology of NET based on four compositional constructs, which contributes to the current knowledge on this topic.

The positivist approach adopted in this research includes:

- **Realism ontology (naive realism).** It is assumed that the entrepreneurial phenomenon under study is an external and immutable reality to be observed as an outsider (Guba and Lincoln, 1994). In this case, it is considered the existence of the reality independently of my own interpretation (Bryman, 2015) as the reality is already defined by properties that enable the study of the cause and effect relationships between different constructs of NET characteristics and success.
- **Positivist epistemology.** This was described by Guba and Lincoln (1994) as dualist and objectivist. Constrained by the ontological position, the detachment of the researcher from the investigated 'object' (in this case, the entrepreneurial reality) helps to reveal knowledge that is not influenced in any direction (i.e. from the researcher to the object or vice versa). Indeed, it is necessary to bear in mind the different strategies to reduce the risk of not keeping the two entities independent. On the contrary, this could jeopardise the possibility of gathering replicable findings and bias the conclusions of the investigation, thus making it difficult to generate acceptable knowledge (Burg and Romme, 2014; Bryman,

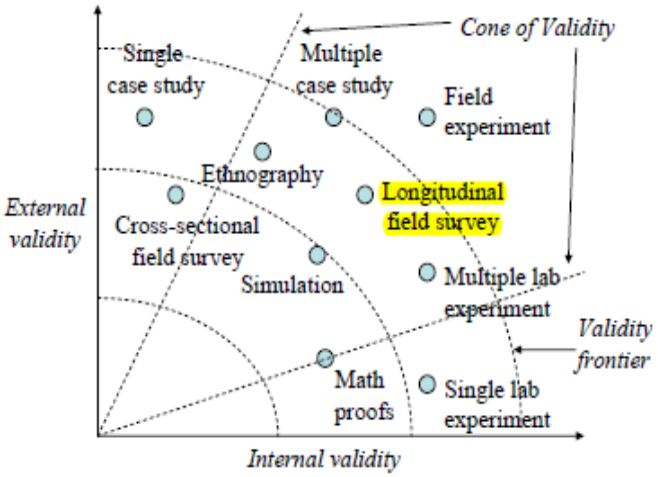
2015).

- **Nomothetic methodology.** Given the ontology and epistemology, it is assumed that reality has measurable properties observable through empirical analysis (Burrell and Morgan, 1979; Guba and Lincoln, 1994).

4.3 Method

Consistent with the positivist paradigm, the research design of this study is based on a quantitative methodology following an exploratory approach. To address the research questions (see Section 3.7), the research uses a dataset that offers longitudinal panel data from individual team members and their respective businesses. Although the data set offers longitudinal data, for the purpose of this research, cross-sectional data from various waves were also considered where relevant.

The use of longitudinal data to study entrepreneurial team dynamics has been recommended by Davidsson and Gordon (2012). Longitudinal data lends a higher degree of internal and external validity to findings by making use of the time varying variables that could effectively measure the variations over time (Bhattacherjee, 2012) (see Figure 4.1). The time lag between the dependent and independent variables is particularly important to address the obvious causality issues relevant to the cause and effect relationships studied in this study and similar others (Davidsson and Gordon, 2012).



Source: (Bhattacherjee, 2012, p.45)

Figure 4.1 Internal and external validity

Conducting an analysis of longitudinal data is not something one should take lightly, due to its complexity. One of the first and major tasks when conducting a longitudinal study is to collect data over a long enough period of time to capture the dynamics between the input and outputs. As this is unrealistic in most cases, often researchers rely on secondary data when longitudinal data collection is necessary. Secondary data is available from many sources, including government agency databases, national statistics, and data collected by other researchers or companies to fulfil their specific research needs (Bhattacherjee, 2012). The use of these datasets has been criticized as they have some weaknesses. Smith (2008) explains that these datasets can be full of errors given that conceptual problems might affect how people are categorised (e.g. race or ethnicity) or even identified as 'suitable' for the survey. Like primary data, secondary data is also socially constructed (Smith 2008). This means that intangible things such as feelings or quality are transformed to its quantifiable representation which sometimes could hinder interpretation. There is also a lack of familiarity, complexity, no control over data quality, and the absence of key variables which leads to the use of proxies (Bryman, 2015). Nonetheless, this thesis has acknowledged the potential issues and has carefully studied, designed and operationalised the variables required to study the research questions.

Data from secondary sources also have some benefits (Bryman, 2015). For instance, the cost and time associated with collecting primary data over a long period would require a significant amount of resources that would be impossible to acquire for some researchers, especially a PhD student. Collating data at the nascent stage is also problematic as this particular stage of the business life cycle have no clear boundaries and outputs to decide on the start and the end points of the process. In this case, secondary sources such as the Panel Studies of Entrepreneurial Dynamics II (PSED II) provides high quality data on nascent entrepreneurship due to the rigorous research design followed when selecting survey respondents and collecting data. PSED II also enabled the generalisability of the findings, as it uses a representative sample of the US population, and a reasonable sample size that offered subgroup analysis. Lastly, given the phenomenon under examination in this thesis, it was necessary to use longitudinal data that enables to answer research questions that explore cause and effect relationships.

Given the limited scholarly attention to NETs, PSED II offers a unique opportunity for scholars studying nascent entrepreneurship, particularly targeting the NETs defined in this thesis as *two or more individuals that share ownership, and that given their physical proximity, engage in the entrepreneurial activity, by combining their characteristics and resources to achieve the creation of a new business.* Thus, PSED II is suitable for studying what NET compositions are prevalent, identifying compositional patterns for defining NET typology, and investigating the effect of the NET composition to nascent entrepreneurial success. The data is particularly useful since it captures nascent entrepreneurs before they become operational businesses and follows them over a period of time, thus reducing the 'survivor bias' from the sample (Davidsson and Gordon, 2012, p.854).

4.3.1 PSED II

PSED II is not the first attempt to collect reliable entrepreneurial empirical data using a representative sample of the US nascent business owner population following a longitudinal design. An initial survey designed as a pilot was performed in Wisconsin by the Wisconsin Housing and Economic Development Authority in 1993. Based on its success, in 1996, the University of Michigan and the University of Wisconsin Survey Laboratory replicated the methodology in relation to a representative sample of US households. This study followed a selected sample of nascent entrepreneurs over five years and was called Panel Study of Entrepreneurial Dynamics (PSED I) to highlight the panel nature of the survey. The second and the third follow-up questionnaires of PSED I were administered by the University of Michigan after receiving financial support from the Ewing Marion Kauffman Foundation. PSED I proved to be a success with scholars across the world including Argentina, Canada, Greece, the Netherlands, Norway and Sweden receiving benefits from the study, resulting in re-drafting and introducing a new version of the study, PSED II, in 2004.

Data collection for PSED II found financial and administrative support not only from the Ewing Marion Kauffman Foundation but also from the US Small Business Administration Fund. The questionnaire has been improved with the help of an advisory committee formed from a group of esteemed scholars in the field, including Howard Aldrich, Diane Burton, Nancy Carter, Per Davidsson, William Gartner, John Haltiwanger, Benson Honig,

James Johnson, Philip Kim, Charles Matthews, Michael Meeks, Simon Parker, Martin Ruef, Claudia Schoonhoven, Scott Shane, Kelly Shaver, and Per Stromberg (Reynolds and Curtin, 2009).

The PSED II design and data collection consisted of three phases. The first involved the identification of respondents that could accurately represent the nascent entrepreneurship population in the US. Here, a randomly selected group of individuals from a representative sample of households was asked three questions, and those who responded 'yes' to at least one was selected to be included in the second phase of the survey. The three questions were:

1. *Are you, alone or with others, currently trying to start a new business, including any self-employment or selling any goods or services to others?*
2. *Are you, alone or with others, currently trying to start a new business or new venture for your employer, an effort that is part of your normal work?*
3. *Are you, alone or with others, currently the owner of a business you help manage, including self-employment or selling any goods or services to others?*

After identifying potential nascent entrepreneurs, a further set of questions was asked from the selected sample to confirm the final sample of nascent entrepreneurs to complete the full survey. These questions covered three areas:

1. engagement in start-up activity in the past 12 months;
2. expectation to own all or part of the new firm; and
3. the initiative has not progressed to the point it may be considered an operating business (Reynolds and Curtin, 2009) (see Table 4.1)

A random sample of 31,845 adults in the US was screened from October 2005 to January 2006 to be included in the first phase of the survey. After the initial screening, 1,587 respondents were identified, of which 1,214 were interviewed and included the final sample used in this study (each of the 1,214 respondents was paid $25 on completion of the interview). This sample represents 12 million individuals between the ages of 18 and 74 years old from the US adult population (Reynolds and Curtin, 2009, p.9).

Table 4.1 Determination of eligibility during the screening interview

Met general criteria		
Currently trying to start a new business on own behalf?	3,393	10.7%
Currently trying to start a new business for your employer?	1,830	5.8%
Currently the owner of a business you help manage?	4,573	14.4%
Total met for any general criteria	7,043	22.1%
Met behavioural criteria (1st)		
Took actions to help start new business in the past 12 months?	3,427	10.8%
Met ownership criteria (2nd)		
Will own this new business?	3,029	9.5%
Met profit criteria (3rd)		
Revenues less than expenses for more than six of the past 12 months?	2,393	7.5%
Consented to detailed interview		
Granted permission for University of Michigan to contact them?	1,671	5.3%
University of Michigan confirmed accuracy of information provided?	1,587	5.0%

Source: (Reynolds and Curtin, 2009, p.309)

During the second phase, respondents were invited to participate in a 60-minute phone interview. The same process was followed in each of the six waves when data was collected from the respondents selected to take part in the second phase of the study. Wave A questionnaire covered 27 topics, including information related to the business, the nature of the start-up team, start-up strategies, the start-up process, financing, background and family context. The follow-up interviews were completed 12 (Wave B), 24 (Wave C), 36 (Wave D), 48 (Wave E), and 60 (Wave F) months after the initial detailed interview (Wave A).

In the telephone interview phase, the interviewers were assisted by a computer program that guided the interviewer through the question sequence. The program also double checked for consistency with the respondent's previous answers and did not allow any miss-capture from the interviewer. As a result of the additional steps introduced, the data set from the PSED II study produced a comparatively low rate of missing data (below 2.6%) for a survey of this nature. It is claimed that the PSED II respondents understood the questions and were willing to answer them by providing accurate information (Reynolds and Curtin, 2009). It is therefore reasonable to assume that the PSED II offers relevant, reliable and valid information useful to study nascent entrepreneurial firms.

The data was obtained through a commercial survey company, whereas the detailed data was collected by academics from the two institutions that sponsored the survey. The information in PSED I and PSED II are publicly available and free to use by any researcher

(www.psed.isr.umich.edu).

Even though this dataset is open to the public, there are some ethical considerations that must be fulfilled by the primary investigators (those involved in collating the data) and the secondary analysts (those who use the data in their research). The primary investigators ensured that the data set did not reveal any information that could be used to identify the business or any of the respondents. I, as a secondary analyst, inherit the responsibility that the data is properly managed, competently analysed and accurately interpreted to avoid misrepresentation of the data originally collected. I am also aware of the ethical codes that cover secondary analysts and thus report the limitations of the data and a personal reflection as a way of offering a critique, highlighting the challenges one would face when using secondary data in answering contemporary research questions as the ones posed in this thesis (Alasuutari *et al.*, 2008).

4.3.2 Unit of analysis

Deciding and confirming the unit of analysis for any given research project is key to establishing the validity of the findings. It forms a major part of the research design and a key ingredient for the successful selection of variables for studying specific research questions. Studies that used individuals, groups, teams, objects, firms or regions and countries as their unit of analysis can be found within the entrepreneurship and small firm literature (Bhattacherjee, 2012).

A significant majority of entrepreneurship research uses the individual entrepreneur, their firm, or a combination as their unit of analysis (Davidsson and Gordon, 2009; Klotz *et al.,* 2014). Yet, the use of 'team' as the unit of analysis is lacking in entrepreneurship studies, making it one of the strengths of this research (Davidsson and Wiklund, 2001). This is important, as team-based ventures outnumber and outperform solo entrepreneurial efforts (Kamm *et al.,* 1990; Gartner *et al.;* 1994; Vyakarnam *et al.,* 1999; Lechler, 2001). However, there is more to understand when it comes to the effects of teams on firm-level outcomes. Thus, a combined team-firm level unit of analysis was followed in this thesis.

Before moving further, it is worth acknowledging two main issues of the dataset that limit the full and accurate capture of data at the team level: the amount of information and the

focal point of contact for data collection. First, the PSED II provides information about individuals that form part of the team. This information is useful to create variables that are relevant at the team level (e.g. sum of the individual human capital = human capital at the team level). However, of those team-based nascent businesses, information from only up to five members of the team at wave 1 were collated in detail (Davis *et al.*, 2009). Although this can be regarded as a limitation of this data set, NET with more than five members with ownership rights at this early stage of business development is highly unlikely. Second, the information reported was drawn from one team member, the respondent. As the main respondent was asked to provide data on behalf of their team members, there was always an element of recall bias and limited knowledge bias that adds to the data. This issue was already acknowledged by Davis *et al.* (2009) when they discussed the challenges in collating data from an egocentric network.

4.3.3 Selecting the sample

This thesis followed four criteria when selecting the study sample from the overall population of the PSED II respondents. First, it differentiated NETs from solo efforts. PSED II question AG1 asked respondents:

> *Will the new business be owned only by yourself, only by yourself and your spouse, or by yourself and some other people or businesses?*

This was used to make the distinction as it identified the enterprises formed by more than one individual, and which members shared the ownership of the business. This means that only individuals owning *part of* the nascent business were considered as the NET. These criteria also included a condition where individuals from the team who did not take an ownership share were disregarded as a team member. This reduced the original sample of 1,214 nascent entrepreneurs to 586 nascent entrepreneurial teams.

Second, this research excluded those cases that reported six or more team members, following the answer to question AG2:

> *How many people or other businesses or financial institutions will share ownership of the new business?*

At the time of PSED II data collection, for cases where the respondent shared information from more than five members, the data from the additional members were recorded in

the fifth member space either by calculating the average, by sum or consensus in Wave A. For instance, a team size with seven members, for the variable 'age', the average age of the 5th, 6th, and 7th member was recorded in the 5th member space (Davis *et al.*, 2009). These cases could mislead the operationalisation of variables. Therefore, applying this criterion resulted in further reductions to the sample of 586 from step one to 564 after step two.

Third, it was observed that the data sample considered two types of firm ownership: a firm that is owned by a person or team of people, or an external institution taking part of the ownership of the firm. Evidently, the information related to the four constructs studied in this research does not apply to institutions, but to individuals. Thus, those cases where an external institution takes ownership of the firm, regardless of the number of institutions that take ownership (one or more), were discarded. As a result, a further 34 cases were dropped from the sample, resulting in a total of 530 cases meeting the eligibility criteria.

Finally, the time period between the NET conceiving the idea for a business and making any of the three success indicators was considered to ensure the measurement of the dependent variable was reliable enough to study the cause and effect relationships studied in this research. Following this criterion, those NETs that reported a time dependent variable which value was equal to zero or negative were excluded from the final sample. This adjustment resulted in producing a final sample of 500 NETs.

4.4 Operationalisation and variable selection

This section explains the variables used in the analyses. As this study used team-level and firm-level variables, it is important to explain and justify the measures considered to perform the analysis appropriately.

4.4.1 Independent variables

The data provides detailed information on the respondent and up to five team members. From each member of the team, the following data was collated and included in the study database:

- Three demographic variables (gender, age, and ethnicity)
- Three human capital variables (level of education, industry experience, and start-up experience);
- Six resources each member brings to the team (introductions to other people, information or advice to help with the business, training in business-related tasks or skills, access to financial assistance, physical resources, and business services); and
- The relationship each individual member has with the other members of the team indicated on a scale with eight categories (spouse, partner living in the same household, partner living in a different household, relative living in the same household, relative living in a different household, friends or acquaintances from work, friends or acquaintances with no prior work relationship, and strangers).

Team member diversity is a key area of interest when studying NET compositions (see section 3.2). This term is one of many employed to refer to heterogeneity. However, the use of diversity to explain and measure team heterogeneity should not be approached lightly because incorrect measurements and broader conceptualisations could result in incorrect misinterpretation of data and results. Harrison and Klein (2007) stressed the importance of differentiating between three types of diversity: separation, variety and disparity (see Table 4.2). These typologies seek to explain how diversity can be observed among the group members. Separation reflects the organisational difference in terms of position or opinion. Variety refers to the categorical differences that could provide diverse knowledge, information or experience. Disparity refers to concentration differences, such as vertical differences including status (Harrison and Klein, 2007). Therefore, it is important to keep in mind that the index or measure to be used largely depends on the variable to be studied (e.g. gender, age, ethnicity, education, and so on). Thus, team-level variables were created from the individual level data provided in PSED II by considering the methodological suggestions from scholars who have studied diversity and Harrison and Klein's (2007) heterogeneity indexes explanation.

Table 4.2 Operationalisation of within-unit diversity types

Diversity Type	Index	Formula	Minimum to Maximum	Assumed Scale of Measurement
Separation (on attribute S)	Standard deviation	$\sqrt{[\Sigma(S_i - S_{mean})^2/n]}$	0 to $[(u - l)/2]$	Interval
	Mean Euclidean distance	$\Sigma\sqrt{[\Sigma(S_i - S_j)^2/n]}/n$	0 to $[(u - l)/\sqrt{(2)}]$	Interval
Variety (on attribute V)	Blau	$1-\Sigma p_k{}^2$	0 to $(K - 1)/K$	Categorical
	Teachman (entropy)	$-\Sigma[p_k \cdot \ln(p_k)]$	0 to $-1 \cdot \ln(1/K)$	Categorical
Disparity (on attribute D)	Coefficient of variation	$\sqrt{[\Sigma(D_i - D_{mean})^2/n]}/D_{mean}$	0 to $\sqrt{(n - 1)}$	Ratio
	Gini coefficient	$(\Sigma\lvert D_i - D_j\rvert)/(2 \cdot N^2 \cdot D_{mean})$	0 to $1 - (1/n)$	Ratio

Note: For separation (S) and disparity (D), the diversity attribute is continuous and can range from a lower bound of l to an upper bound of u. Theoretically, l can be $-\infty$ for separation attributes and (commonly) 0 for disparity attributes, while u can be $+\infty$ in either case. Operationally, l and u are limited by the instrument used to measure the attribute in question. For variety (V), the attribute is nominal or discrete. It can take $k = 1, \ldots K$ possible categories.

Source: (Harrison and Klein, 2007, p.1210)

4.4.1.1 Demographic diversity

This measure was derived from the data available for each individual member of the team in relation to their gender, age and ethnicity. For gender, a broader categorisation was used, which was subsequently combined to offer a dichotomous indicator that measures the level of team heterogeneity. A five category (only male, only female, male dominated, female dominated and mixed gender team) variable was converted into a dichotomous variable to differentiate homogeneous teams (= 0) from heterogeneous teams (=1) (see Table 4.3).

Table 4.3 Gender variable transformation.

Type of NET	Level of homogeneity
1. Only Male	0: Homogeneous
2. Only Female	0: Homogeneous
3. Male Dominated	1. Heterogeneous
4. Female Dominated	1. Heterogeneous
5. Mixed gender teams	1: Heterogeneous

When measuring age diversity in a group working together, Ancona and Caldwell (1992), Ruef *et al.* (2003) and Steffens *et al.* (2012) suggested using coefficient of variation. This measure divides the standard deviation of member ages by its mean, thereby providing an accurate measure of dispersion. The following formula was used:

$$CV = \sqrt{\left[\sum (D_i - D_{mean})^2/n\right]}/D_{mean} \quad (1)$$

Where D_i represents the age of each member, D_{mean} is the mean age of the team, and n represents the size of the team.

As ethnicity is a measure in PSED II that gives the respondents an opportunity to select more than one ethnic group from a given list of possible options (i.e. Hispanic, White, Black or African American, American Indian, Asian, Pacific Islander, and others), measuring diversity following a standard method was found to be difficult. Therefore this study used a more flexible measure, whereby each team is given a score of '0' if the team members reported sharing the same ethnic group (only one type of ethnicity) and '1' for ethnically heterogeneous NETs. A similar procedure to measure ethnic diversity can be found in the literature (Yang and Aldrich, 2014).

4.4.1.2 Human capital heterogeneity

Human capital is defined as the "amount of knowledge that can be obtained by formal education, previous experience, or informal training" (Aldrich and Martinez, 2001, p.10). This study therefore used three components to measure human capital heterogeneity: level of education, industry experience and start-up experience. Blau's index was used to measure the level of heterogeneity for each of these variables (Chowdhury, 2005; Kaiser and Müller, 2013). This is computed using the following equation:

$$Blau's\ Categorical\ Index = 1 - \sum_{i=1}^{s} P_i^2 \quad (2)$$

Where P represents the proportion of team members in a category, and i is the number of different categories represented in the team. Given that Blau's index uses categorical variables (i.e. measures how many members belong to each category), it was necessary to transform each of the three variables into a categorical type of variable (see Table 4.4). For example, the original variable, level of education was first used to form a three-category variable (basic, medium or high). Later on, when creating the composite variable, if a team has three members and each member has a different level of education, the team was assigned a score of $\left[1 - \left(\frac{1}{3^2} + \frac{1}{3^2} + \frac{1}{3^2}\right)\right] = 0.67$, whereas a three member team with the same level of education was assigned a score of 0. This categorisation has

resulted in creating an index that ranged from '0' to '1' indicating completely homogeneous to completely heterogeneous composition respectively.

This first level categorisation was later used to create three dichotomous variables, with a value of '0' representing a homogeneous NET whereas a value of '1' representing a heterogeneous NET. To dichotomise the variables, the median value was used to decide on the cut-off point.

Table 4.4 Human Capital heterogeneity variable

HC Characteristic	Type of variable	Original variable Wave A	Transformed variable
Educational background	Categorical	Up to eighth grade Some high school High school degree	1: Basic
		Technical or vocational degree Some college Community college degree Bachelor degree	2: Medium
		Master degree Law MD, PhD, EDD degree	3: High
Industry Experience	Interval	0-55	1: None 2: 1-9 years 3: More than 9 years
Start-up experience	Interval	0-25	1: None 2: 1 or 2 ventures 3: More than 2 ventures

4.4.1.3 Resource heterogeneity

This measure was derived based on the level of resources that each member brings to the team measured through collating data from each team member on the following resources:

1. Introductions to other people;
2. Information or advice to help with the business;
3. Training in business-related tasks or skills;
4. Access to financial assistance;
5. Physical resources; and
6. Business services.

The responses to these six individual resources were used in combination to create a measure of resource heterogeneity. To explain this further, Muñoz-Bullon *et al.* (2015, p.100) provide the following example:

> For instance, consider two-member teams in two firms, A and B. In firm A, the two members have access to introductions, information, training and financial assistance, while in firm B, the first member has access to introduction and information, and the second member has access to training and financial assistance. We codified the resource heterogeneity variable using a two-step procedure. First, we verified whether either one of the two team members contributed each of the resources. For this purpose, we created a series of binary variables (one for each resource involved), which took value 1 if either team member contributed access to each particular resource. Then, in a second step, we calculated the summation of the values of those binary variables in each team. The result is that the value of the number of unique resources is the same for both teams (i.e. four). We thereby ensure that the resource heterogeneity variable reflects resource variety within the team, and that, in particular, its value in firm A is not zero (Muñoz-Bullon *et al.* (2015, p.100).

Thus, when computing this variable, the number of non-repeated resources that the NET has was considered. For instance, if a NET has a resource heterogeneity value equals to three means that the team has at its disposal three different type of resources. Thus, the minimum value of '0' representing a NET with no resource heterogeneity to '6' representing a NET with the highest possible level of resource heterogeneity.

4.4.1.4 Familiarity

People who live with or have frequent contact with each other are more susceptible to forming a team and starting a business (Francis and Sandberg, 2000; Hinds *et al.*, 2000). This can be understood from the physical proximity of individual members, measured through their affective/social relationship that is reported in the dataset. Based on the data and typologies discussed in the family business literature, the following rules were applied to compute the variable 'familiarity':

Table 4.5 Familiarity variable transformation

Original Variable	Rules for teams of two	Rules for teams of more than two
1: Spouse **2: Partner sharing a household** **3: Relative living in the same household** **4: Relative living in a different household** **5: Friend or acquaintance from work** **6: Friend or acquaintance you have not worked with** **7: Stranger before joining the new business team** **8: Partner living in a different household**	1. Copreneurs: Spouse or Partner sharing a household 2. Family related: Relative living in the same household or Relative living in a different household 6. Friend: Friend or acquaintance from work or Friend or acquaintance you have not worked with, Partner living in a different household 7. Stranger: Stranger before joining the new business team	2. Family related: Spouses or Partners sharing a household or Relatives living in the same household or Relatives living in a different household 3. Family and close friends: There has to be at least one of: Spouse, Partner sharing a household, Relative living in the same household, Relative living in a different household. And at least one of: Friend or acquaintance from work, Friend or acquaintance you have not worked with and Partner living in a different household 4. Open family: There has to be at least one of: Spouse, Partner sharing a household, Relative living in the same household, Relative living in a different household and stranger before joining the new business team 5. Friends: Friends or acquaintances from work or Friends or acquaintances you have not worked with, Partners living in a different household 6. Non-family: Friends or acquaintances from work, Friends or acquaintances you have not worked with, Partners living in a different household and Strangers 7. Strangers: Strangers before joining the new business team

After establishing the type of team based on the affective/social relationship, the categories were combined to provide a two-category variable: a) copreneurial teams, referred to spouses or partners living together, and b) 'others' teams, referred to teams formed by family, friends and colleagues.

As explained in section 3.2, team formation research can be undertaken from different angles; however, this thesis framed the study of team formation from the compositional approach, in which the focus was on why individuals decide to start a team with certain people instead of others. It has been stated that teams are formed mainly for two reasons: either because people stick with people similar to them (Byrne, 1971; Bird, 1989; McPherson, 2001), or choose those who are different, and so complement their profile (Aldrich and Kim, 2007; Vogel *et al.,* 2014). Furthermore, the literature has stated that team composition is also influenced by the degree of closeness between the members (Hinds *et al.,* 2000; Ruef *et al.,* 2003). These tendencies produce teams with different degrees of diversity and physical proximity, all of which have been accurately measured in this thesis (gender, age, ethnicity, education, industry experience, start-up experience, resources, and familiarity). This accuracy was achieved following various coding strategies utilised in the literature to study team formation (Ancona and Caldwell, 1992; Chowdhury, 2005; Hmieleski and Ensley, 2007; Steffens *et al.,* 2012; Yang and Aldrich, 2014, Muñoz-Bullon *et al.,* 2015) and physical proximity (Hinds *et al.,* 2000), and by

gaining understanding of how diversity should be measured, either as a degree of separation or as a variety or disparity (Harrison and Klein, 2007) (See Table 4.6[10]).

Table 4.6 Considerations for the operationalisation of the independent variables

	Entrepreneur characteristics	Criteria	Values	Reference
Demographic Variable	Gender	Homophily attraction based on gender 1. Only Males 2. Only Females 3. Male Dominated 4. Female Dominated 5. Mixed gender teams	0: Homogeneous 1: Heterogeneous	Original construction
	Age	Coefficient of variation $CV = \sqrt{\left[\sum (D_i - D_{mean})^2/n\right]}/D_{mean}$	0 : perfect homogeneity 1 : perfect heterogeneity	Ancona and Caldwell (1992)
	Ethnicity	Single ethnicity vs Mixed ethnic NET	0: Homogeneous 1: Heterogeneous	Yang and Aldrich (2014)
Human Capital Heterogeneity	Education, industry experience and start-up experience	Blau's index $H = 1 - \sum_{i=1}^{s} P_i^2$	0: Homogeneous 1: Heterogeneous	Chowdhury (2005) Hmieleski and Ensley (2007)
Resource Heterogeneity	Introduction to other people Information or advice to help with the business Access to financial resources Physical resources Business assistance (legal, accounting)	Resource Heterogeneity index	0: No heterogeneity 6: highly heterogeneous	Muñoz-Bullon *et al.* (2015)
Familiarity	Physical proximity	Copreneurs Family related Family and close friends Open family Friends Non-family Strangers	0 : Copreneurs 1: 'Others'	Original construction based on Hinds *et al.* (2000)

The coding strategy followed in this thesis is consistent with the theoretical framework and serves to the purposes of this thesis, however, some limitations are worth mentioning. For instance, the gender-diversity variable was useful to capture which type

[10] Appendix 4 contains information of the items used from the PSED II questionnaire to operationalise the variables.

of team is more prevalent in relation to heterogeneous *vs* homogeneous criteria and the association this diversity has on the outcomes. Yet, this variable *per se* is not sufficient to measure whether women- or men-homogeneous teams increase their probability to succeed in the nascent entrepreneurial activity. Likewise, the education-diversity variable can capture what type of team is more prevalent or increases the probability to success but does not capture to study if teams homogeneously formed by individuals with basic, medium or high level of education are the ones who are in advantage. Finally, the resource heterogeneity does capture the level of diversity but does not capture if the presence or absence of certain type of resources actually increases or decreases the odds to success. Even though these limitations could be considered as disadvantages, they should be acknowledged and exploited to enrich the findings in this research or in future research projects.

4.4.2 Dependent variables

To study the NET' composition influence on firm outcomes, the dependent variables need to be measured at the firm level. Firm outcomes are often measured using performance/success measures in the small firm and entrepreneurship literature (Schoonhoven *et al.*, 2009). However, determining an accurate variable to measure 'success' of a nascent entrepreneurial firm is quite challenging (Zhou and Rosini, 2015). Schoonhoven *et al.* (2009) summarised some of the potential variables that have been used in the literature, but among the better alternatives for studying success in nascent entrepreneurial firms, three measures seems to be realistic:

1. First sale, referring to a nascent business that has made its first sale;
2. Profitability type I, indicating firms whose monthly revenue exceeds the monthly expenses; and
3. Profitability type II, cases where the monthly revenue not only exceeds the monthly expenses but also includes the owners' salaries.

The literature also recommends the self-reported status as a measure of firm success, but a firm reporting being a 'new business', 'still trying' or 'quit' depends more on the respondent's perception rather than hard facts such as sales or revenues (Brannon *et al.*, 2013; Muñoz-Bullon *et al.*, 2015). There are other studies that have used cash flow or

sales growth as a success measure, but again these measures are more suitable for small businesses rather than nascent efforts as pointed out by Brannon *et al.* (2013). As a result, this study used three dependent variables to measure firm success during the nascent stage: first sale, profitability type I and profitability type II.

Given that positive achievements in one area (e.g. making the first sale) leading into achieving positive results in the others, the three measures can be regarded as milestones, with 'first sale' as the first milestone, 'profitability type I' as the second, and 'profitability type II' as the third.

Operationalisation of the three dependent variables involved two procedures. First, a variable was created to indicate if the NET achieved its respective milestone (e.g. achieved the first sale = 1) or '0' otherwise. Second, an additional variable was then created based on the information from those who had achieved the milestone. This internal variable captures the time taken to achieve that milestone.

4.4.2.1 First milestone

The *First_sale* variable was created to indicate if the NET has achieved the 'first sale'. Regardless of the time taken to achieve its first milestone, those made the first sale within the five-year duration of the survey were assigned a value of '1', or '0' otherwise. To accurately reflect the achievement of this milestone, the status of making the first sale has been updated at each wave (A to F) following the response to the variable *E13[11]:

> *'Has this new business already received any money, income, or fees from the sale of goods or services?'*

The variable *Sale duration* was created to measure the time taken to achieve the first sale. To create this variable, the time in months between the date when the NET first started to think about starting a business (AA8) and the first date the NET reported having achieved the first sale (*E14) was recorded.

[11] * indicates that the variable appears six times in the data, i.e. from wave A to F.

4.4.2.2 Second and third milestones

The variables *prof1* for profitability type I and *prof2* for profitability type II were created. To compute these two, *E15 and *E17 from Wave A to F of the PSED II dataset were used:

> **E15: 'Has monthly revenue ever exceeded monthly expenses for this new business?'*
>
> **E17: 'Are salaries for the managers who are also owners included in the computation of monthly expenses?'*

It was given a value of '1' to cases that have achieved the milestone and '0' otherwise. The variables *prof1_t* and *prof2_t* were also created to measure the time taken to achieve success. To create this variable, the time in months was calculated from the date when the NET first started to think about starting a business (AA8) until the first date the NET reported having achieved profitability type I (*E16) or profitability type II (*A35).

4.4.3 Control variables

The control variables considered in these analyses are as follows:

4.4.3.1 Team size

The team size has been related to the level of heterogeneity in the team, as larger teams have a higher tendency to report higher levels of diversity and vice versa. Team size can also influence team success, both positively and negatively. For example, larger teams could bring more resources, and resources play a key role in firm survival and success (Amason *et al.*, 2006). Larger teams could also mean lower levels of cohesion resulting in team conflicts that could end up with team members leaving the team (Foo, 2011). To control for these effects, team size was used as a control variable in the multivariate analysis. To measure this variable, the team size reported through the item AG2 in Wave A of the PSED II questionnaire was used.

4.4.3.2 Industry

Firms operating in different industries have different requirements for success (Foo, 2011) and the effective team size and member characteristics vary based on which industry a team is in (Ruef *et al.*, 2003; Brannon *et al.*, 2013). Firms operating in different industries face different demands at different stages of their business life, making team

member entrance and exit necessary to address the changing demands (Ucbasaran *et al.*, 2003).

This study controlled for the effect of industry by including an industry dummy variable in its regression models. To do so, the item AA1 *(What kind of business are you starting?*) from the Wave A questionnaire and the NAICS industry code were used. The data was first recoded into three categories: manufacturing, trading and service. After that, a dummy variable was created, using manufacturing as the reference category and trading and service as the dummies (see Table 4.7).

Table 4.7 Dummy variable per industry type

Group	Categorical Variable	Dummy variable
Agriculture **Mining** **Construction** **Manufacturing**	1: Manufacturing	Reference category
Wholesale trade **Retail trade,**	2: Trading	1: Trading 0: Manufacturing
Transportation and warehousing **Information** **Finance and insurance** **Real estate and rental and leasing** **Professional, scientific and technical services** **Administrative and support and waste management and remediation services** **Educational services** **Health and care and social assistance** **Arts, entertainment, and recreation,** **Accommodation and food services** **Other services**	3: Services	1: Service 0: Manufacturing

4.4.3.3 Mean work hours

The time dedicated by each team member can have an influence on the achievements of the team as a whole. Also, a member could decide to join a team based on their time availability. Thus, the time that the team members have dedicated to the nascent business needs to be controlled for. The PSED II included the question *'how many hours in total have you devoted to this (new) business?'* The dataset reveals the number of hours per respondent (i.e. from member 1 to 5). Thus, the mean working hours of each individual member in the team devoted to their nascent effort was calculated by using the item AH14 in PSED II.

4.4.3.4 Opportunity or Necessity to start a business

The definition of nascent business followed in this study and in PSED II covers businesses in at least three different stages of inception: conceiving the idea, made the decision to start a business, and both. Literature suggest that entrepreneurs' motivation to start a business have a different impact on entrepreneurial outcomes, whether the team motivation is driven by necessity or opportunity (Block and Wagner, 2010). This means, the team has conceived the idea for the business (opportunity) so team members voluntarily decide to start a business, or the team has decided to start the business (necessity) due to 'externally stimulated' circumstances (Bhave, 1994). To control for these effects, a dummy variable was created using item AA7 from the PSED II questionnaire that asked to the main respondent:

> *'Which came first for you, the business idea or your decision to start a business – or did they occur together?'*

The item had three possible answers. Thus, the data was first recoded into three categories: opportunity (business idea), necessity (decision to start a business), and both. After that, a dummy variable was created, using 'both occur at the same time' as the reference category in the dummy variable.

4.5 Analytical strategy

The analytical strategy depends on the objectives and research questions previously defined in Chapter 1 and 3 respectively. Table 4.8 summarises the type of analyses used to answer each research question.

Table 4.8 Summary of analyses conducted to answer research questions

Research Question	Techniques	Software
1. What types of composition are prevalent in NETs? **a. What compositional dynamics can be observed in the NET over time?** **b. How do the different compositional constructs used in this study (i.e. demographic diversity, human capital, resource heterogeneity and familiarity) relate to, or influence, each other?**	Descriptive statistics Cross tabulation Pearson chi-square T-test Analysis	STATA 14
2. What different team profiles or types can be identified among NETs, based on their compositional dimensions?	Cluster Two Step	SPSS
3. What effect does NET composition have on nascent entrepreneurial success?	Pearson chi-square T-test Analysis Logistic Regression Multiple Linear Regression	STATA 14

The research has three analytical phases. The first phase answered the first research question: *'What types of composition are prevalent in NETs?'* To do so, NET were analysed using four compositional constructs and their correspondent variables (see Figure 4.2): a) demographic diversity- using gender, age and ethnicity as its variables; b) human capital, measured by education, industry experience and start-up experience; c) resource heterogeneity, considering resource diversity to capture the value of each member in the team; and d) familiarity, measured by seven types of relationships reflecting how close the members are.

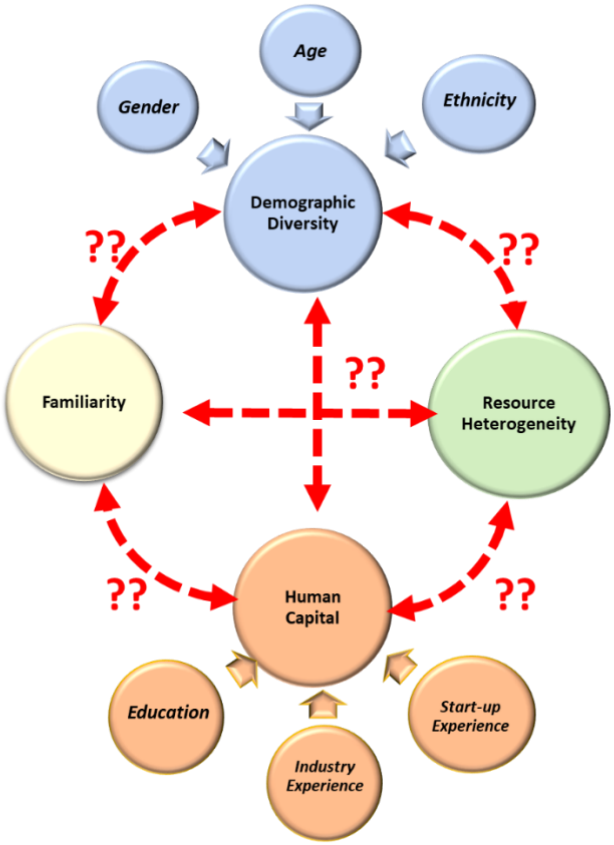


Figure 4.2 Explaining Nascent Entrepreneurial Team Composition

In answering the first research question, the data distribution patterns for each independent/explanatory were analysed using descriptive statistics. This analysis followed four steps. In the first step, the characteristics of individual team members were studied to learn who has a higher tendency to start an entrepreneurial activity by being part of a team. In step two, a team level analysis was conducted to study team

composition differences based on the diversity and familiarity criteria used in this thesis. Step three, descriptive analysis was employed to trace any changes to the composition of the NET from Waves A to F. Lastly, a pair-wise comparison was made following cross-tabulation, Chi-square and t-tests, where relevant, to establish synergies between teams. The third and fourth step involved in the analysis thus addressed the two sub-questions: *'What compositional dynamics can be observed in the NET over time?'* and *'How do the different compositional constructs used in this study (i.e. demographic diversity, human capital, resource heterogeneity and familiarity) relate to, or influence, each other?'*

Unlike the first phase of analysis, which only permitted analysis of two configurations at once, the second phase followed TwoSteps cluster modelling to identify team profiles. The purpose of this phase was to explain NET composition in a configurational manner, and to address research question two: *What different team profiles or types can be identified among NETs, based on their compositional dimensions?*

Phase three investigated the direct relationship between NET Composition and Success (Figure 4.3). All the direct relationships were measured after controlling for the team size, type of industry the business is in operation, mean work hours and the question related to whether the idea or deciding to start a business came first. The purpose of this phase was to answer the third research question*: 'What effect does NET composition have on nascent entrepreneurial success?'*

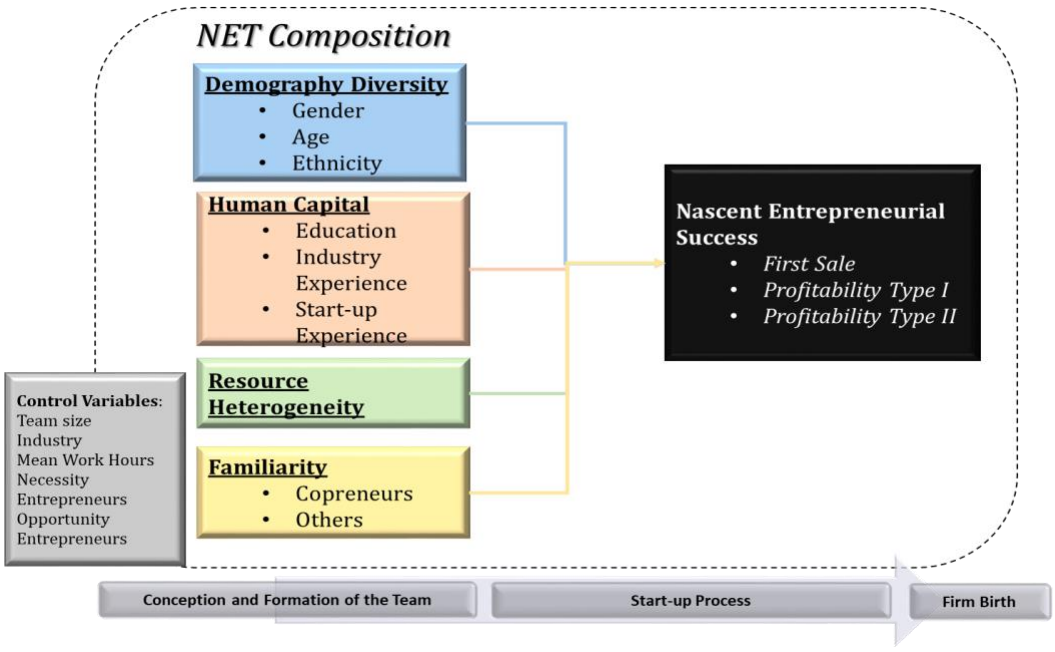


Figure 4.3 Cause-effect analysis

In addition, the third phase included an analysis to study the cause and effect of the NET profiles or types on success. This has gone beyond the consideration of the compositional predictors on an individual basis to include the membership of clustering to reveal the compositional effect on 'success' as a whole.

To account for the effect of NET composition on firm outcomes, logistic and multiple linear regression models were used. Logistic regression makes it possible to perform regressions in a nonlinear binary response mode. This technique makes it possible to measure whether or not a particular outcome has been achieved; in this particular case, if the NET has reached its three milestones. Hence, the logistic regression measures the probability of the dependent variable (Y) occurring, given the values of one or more independent variables (X or Xs). The probability equation for logistic regression, with one predictor, is:

$$P(Y) = \frac{1}{1 + e^{-(b_0 + b_1 X_{1i})}} \tag{3}$$

Where $P(Y)$ is the probability of Y occurring, e represents the base of the natural algorithms, and the coefficient $-(b_0 + b_1 X_{1i})$ represents a linear combination that is almost identical to the linear regression. The predictor with its parameter b, unlike linear regression, is calculated using a *maximum–likelihood estimation*. This means that "various solutions are estimated until the best solution of having the maximum likelihood is found" (Acock, 2008, p.344). Such coefficient changes depending on the number of predictors:

$$P(Y) = \frac{1}{1 + e^{-(b_0 + b_1 X_{1i} + b_2 X_{2i} + \cdots b_n X_{ni})}} \tag{4}$$

Logistic regression results with a value close to '0' means that the probability of Y occurring is very low and close to '1' otherwise. This statistical tool is performed by using *logit* and *logistic* commands in STATA 14 software. The *logit* command calculates the regression coefficient to estimate the logit score, while the *logistic* calculates the odd ratios (Acock, 2008).

Multiple linear regression was used to measure the time taken for the team with a certain configuration to reach its three milestones. This tool makes it possible to measure the effect of any number of predictors on the dependent variable. The multiple regression equation took the form:

$$\hat{Y} = b_0 + b_1 X_{1i} + b_2 X_{2i} + \cdots b_k X_{ki} \quad (5)$$

Where $\hat{Y}$ is the predicted value of the dependent variable, b_0 is the intercept or constant, b_1 is the regression coefficient for the effect of X_1, and b_k is the regression coefficient for the $X_k$last variable (Acock, 2008). Linear regression models used the *regress* command and *regress robust* test in STATA 14.

4.6 Summary

The discussion at the beginning of this chapter in relation to which paradigm best suits the study of entrepreneurship illustrates its complexity. Interpretivist and positivist approaches have been used to conduct entrepreneurial studies, and in either case, the findings provide insightful results. Interpretative research allows understanding of the phenomenon from the researcher's point of view, while a positivist approach allows the study of entrepreneurial phenomena as an object independent of the researcher. Given the lack of entrepreneurial studies that have used 'team' and 'firm' units of analysis, it is better to conduct positivist research, as this leads to objective, deductive and, to a certain extent, generalisable findings (Jennings *et al.*, 2005; Karatas-Ozkan *et al.*, 2014). Thus, this thesis chose a positivist and quantitative approach.

The study used a selected sample from the PSED II, a longitudinal panel data set that collected data from nascent entrepreneurs over 5 years of venture inception at the nascent stage. This secondary dataset has proved useful and reliable data in studying nascent entrepreneurial process and its related outcomes and offers opportunities to study NET composition measured in terms of its diversity and member familiarity and NET outcomes. Thus, this chapter explained how the variables were selected and operationalised to help this thesis' purposes.

Chapter 5. Portraying Nascent Entrepreneurial Team Compositions

5.1 Introduction

This chapter presents the descriptive data detailing the characteristics of the team members, the nature of the NETs, the difference and association between teams with different compositions, and team profiles developed following a cluster analysis. It offers explanations in relation to the first and second research questions:

> *What types of composition are prevalent in NETs?*
>
> *What different team profiles or types can be identified among nascent entrepreneurial teams based on their compositional dimensions?*

The first section studies the characteristics of the individual members in each team. Individual team member profiles are important to understand the composition of the team as a unit. This descriptive information is based on a sample of the PSED II data that includes information collected from NETs with five members or less. With this restriction, it is possible to focus on teams of similar sizes and so make meaningful comparisons. The second section presents descriptive data related to the team as an analytical unit. Here, the data is organised around the four compositional constructs discussed earlier: demographic diversity, human capital, resource heterogeneity and familiarity. This exercise offers insight into various forms of nascent entrepreneurial teams defined in relation to the homogeneity and heterogeneity criteria around the first three constructs, and proximity for the last construct. The third section presents compositional variations over time, taking data from the 6 waves of PSED II sample. In the fourth section, a comparison between various forms of NETs is made. Here, chi-square and t-tests are used to highlight significant differences and associations between NETs. The fifth section of this chapter presents the results from the cluster analysis. This analysis is important to identify and offer a NETs typology. It helps in understanding various forms of NETs when the four compositional constructs are studied together. The chapter finalises by presenting a summary of the overall findings.

5.2 The team member

The decision to become an entrepreneur requires certain characteristics, skills and resources. Entrepreneurial activity is a risky endeavour with limited success for a majority of those who take up the challenge. It is not a wild intellectual leap to suggest individuals who team up and share ownership of their new enterprise can face additional complexities in comparison to sole-owned operations. Indeed, some of these issues have been outlined in previous chapters. To recall, briefly, individual members of the team have different characteristics and relationships, and each brings resources to the team. Individual members of the team enter and exit at various times, bringing potential changes to the composition of the team over time. Therefore, it is important to identify the type of people joining the entrepreneurial team. Only after having considered the individual, it is possible to study the team, as it represents the sum or combination of the individuals' characteristics. As explained in Chapter 3 and summarised in the conceptual model (Figure 3.7), the compositional constructs identified to analyse team composition in this study are: demographic diversity, human capital, resource heterogeneity and familiarity. Familiarity has been defined based on the proximity between two individuals and, therefore, is a construct pertaining to relationships. Hence, it is not included in the descriptive analysis that focuses on individuals.

Table 5.1 presents the descriptive statistics relevant to the team members who were part of the initial team structure based on the data reported in Wave A, PSED II. Demographic diversity is explained through gender, age and ethnicity. The data suggests that the sample has an over representation of men (61.6%) compared to women (38.4%), indicating that men have a higher tendency to join teams or form an entrepreneurial team when starting a business. The average age of individuals forming part of a NET is 43 years (*SD* = 13.3). The youngest individual from the studied sample engaged in NET is 15, whilst the oldest is 86 years old. Less than 4% are below 21 years of age, and only 2.6% are over 70. There are more white-ethnic team members than all other races combined. Team members with a white-ethnic background represent 79.1% of the sample, while the remaining 20.9% come from other ethnic groups including Hispanics, Black or African-American, American Indian, Asian, Pacific Islanders and those of a mixed heritage.

Table 5.1 Team member descriptive analysis

Compositional construct	Variable		Frequency	*Percent (%)*
Demographic Diversity	*Gender*	*Two categories*		
		Males	719	61.56
		Females	449	38.44
		Subtotal	1168	100.0
	Age	(1150 observations)	*Mean*	*SE*
		Min=15	42.89	13.26
		Max= 86		
	Ethnicity	*Seven categories*		*(%)*
		White	894	79.12
		Hispanic	2	0.18
		Black or African American	116	10.27
		American Indian	21	1.86
		Asian	14	1.24
		Pacific Islander	3	0.27
		Mixed	80	7.08
		Subtotal	1130	100.0
Human Capital	*Education*			
		Three categories		
		1. Basic educational level	323	28.53
		2. Medium educational level	629	55.57
		3. High educational level	180	15.90
		Subtotal	1132	100.0
	Industry Experience	*Three categories*		
		1. None	374	33.24
		2. 1-9 years	392	34.84
		3. More than 9 years	359	31.91
		Subtotal	1125	100.0
	Start-up experience	*Three categories*		
		1. None	585	53.13
		2. 1 or 2 ventures	404	36.69
		3. More than 2 ventures	112	10.17
		Subtotal	1101	100.0
Resource Heterogeneity	*Resources*			
		Six categories		
		1. Introductions to other people	759	67.71
		(Absence)	362	32.29
		Subtotal	1121	100.0
		2. Information or advice to help with the business	1006	89.74
		(Absence)	115	10.26
		Subtotal	1121	100.0
		3. Training in business-related tasks or skills	488	43.18
		(Absence)	637	56.82
		Subtotal	1121	100.0
		4. Access to financial assistance	335	29.88
		(Absence)	786	70.12
		Subtotal	1121	100.0
		5. Physical resources	640	57.09
		(Absence)	481	42.91
		Subtotal	1121	100.0
		6. Business services	484	43.18
		(Absence)	637	56.82
		Subtotal	1121	100.0

The second compositional construct studied in this thesis is human capital. Measures relating to three aspects of human capital are considered in the analysis: education, industry experience and start-up experience. Team members were grouped into one of three categories based on their level of education: high, medium, and basic. A majority of the sample (55.6%) are in the medium education category, with only 15.9% possessing a high level of education (i.e. above a bachelor's degree). Experience consists of two measures, one in relation to industry experience measured through asking individual members if they have experience working in the same industry to that of the start-up, and the other in learning if the individual has previous experience of starting a business. In terms of industry experience, two-thirds (68.1%) of the individuals had previous experience that matched their current entrepreneurial interests. However, 53.1% of team members did not have any start-up experience prior to joining the nascent team studied in this thesis.

The final compositional construct studied is resource heterogeneity. Using this, this study addresses the type and frequency of resources that each team member brought to their respective NET (see Table 5.1). The most common resource, provided by 89.7% of the individuals, was 'information or advice to help with the business'. This was followed by 67.7% who were able to introduce other people to the team. The least common resource an individual team member brought to their start-up efforts was access to financial assistance (29.9%). Such a result may support the idea that only approximately one-third of all team members have assisted their business with equity, loans or loan guarantees. Based on these descriptive statistics, individuals joining a new venture team have a greater tendency to bring resources in the form of additional people (67.7%), information (89.7%) or physical resources (57.1%), than financial resources (29.9%).

5.3 NET compositions

5.3.1 NET diversity

In this study, individual data was used to calculate the degree of team diversity. In relation to the first three constructs (demographics, human capital and resources), the final measure of diversity was based on the homogeneity and heterogeneity criteria (see Chapter 4), and proximity for the fourth construct (familiarity). Table 5.2 presents information taken from Wave A of US PSED II data in relation to the team members'

characteristics of the nascent entrepreneurial teams studied in this thesis.

Table 5.2 Team Diversity descriptive analysis

Compositional Construct	Variable		Frequency	Percent		
Demographic Diversity	*Gender*	*Two categories*				
		Homogeneous	160	32.00		
		Heterogeneous	340	68.00		
		Subtotal	500	100.0		
			Mean	*SD*	*Min*	*Max*
	Age	Coefficient of variation (493 observations)	0.13	0.14	0	0.73
	Ethnicity	*Two categories*				
		Homogeneous	389	82.07		
		Heterogeneous	85	17.93		
		Subtotal	474	100.0		
			Mean	*SD*	*Min*	*Max*
Human Capital	*Education*	(487 observations)	0.22	0.24	0	0.67
		Two categories				
		Homogeneous (=0)	265	54.41		
		Heterogeneous (>0)	222	45.59		
		Subtotal	487	100.0		
			Mean	*SD*	*Min*	*Max*
	Industry Experience	(484 observations)	0.26	0.25	0	0.67
		Two categories				
		Homogeneous (=0)	245	51.62		
		Heterogeneous (>0)	239	48.38		
		Subtotal	484	100.0		
			Mean	*SD*	*Min*	*Max*
	Start-up Experience	(477 observations)	0.24	0.25	0	0.67
		Two categories				
		Homogeneous (=0)	242	50.62		
		Heterogeneous (>0)	235	49.38		
		Subtotal	477	100.0		
			Mean	*SD*	*Min*	*Max*
Resource Heterogeneity	*Resources*	Resource heterogeneity index (484 observations)	4.35	1.38	0	6
Familiarity	*Physical proximity*	*Two categories*				
		Copreneurs	250	50.30		
		Others	247	49.70		
		Subtotal	497	100.0		

Demographic diversity was studied using the variables gender, age and ethnicity. It was found that heterogeneous compositions in NETs are more prevalent when teams are studied by gender. In this particular sample, 68% of the teams were formed from a heterogeneous pool of members, and the average of the age-coefficient of variation is 0.13 ($SD = 0.14$). This shows that age homogeneous compositions are more prevalent in NETs as the mean value of the coefficient of variation close to zero, which indicates that the majority of the teams are formed by members of similar ages. If the mean value of the coefficient of variation was close to one, this would indicate that the team was age-heterogeneous. Team homogeneity with respect to ethnicity could be inferred from the data that revealed 82.1% of the teams are formed by individuals from the same ethnic background compared to a significant minority (17.9%) that is populated by members from multiple ethnicities. Overall, the results suggest team homogeneity with respect to age and ethnicity demographics and team heterogeneity with respect to gender demographic.

Blau's index for the human capital diversity measures were calculated, and these indices were used to set homogeneity-heterogeneity criteria for team composition. When studying teams in relation to human capital diversity measured in terms of education, industry experience and start-up experience of team members, the results did not offer a clear distinction in experience, although data supported a slightly higher prevalence of homogeneous over heterogeneous team compositions. For instance, there are only 3.24% more industry experience-homogeneous teams than industry experience-heterogeneous teams. Similarly, start-up experience-homogeneous teams are only 1.24% more than start-up experience-heterogeneous teams. Even though established measures of human capital diversity from team literature were sought, this inconclusive finding could be due to the use of inappropriate measurements. Thus, it is necessary to review the Blau's index distributions for industry experience and start-up experience. According to the results in Appendix 5, 58.9% of the teams have an industry experience Blau's index<0.5. Likewise, 60.8% of the teams have a low level of start-up experience diversity. Therefore, it is evident that teams of homogeneous compositions outweigh heterogeneous compositions in terms of experience. The results suggest that people with similar levels of education and experience often get combined to pursue an entrepreneurial opportunity.

The results presented in Table 5.2 suggest that heterogeneous teams have a higher representation when NETs are studied based on the types of resources each individual brings into the NET. In such a case, the average of the resource heterogeneity is 4.35 ($SD = 1.38$) (See section 4.4.1). Only 25.4% of the sample reported a resource heterogeneity value ≤ 3, meaning that 74.6% of the teams' resource heterogeneity oscillates between 4 and 6 (see Appendix 5). This means that teams are more likely to be formed by individuals who possess and complement each other's resources.

As part of the exploratory analysis, resource heterogeneity was broken down into individual resources to further study the resource capabilities of nascent entrepreneurial teams. Table 5.3 illustrates the frequency of each of the six types of resources present in the nascent business, and the percentage of teams that possess a certain type of resource. It shows that gaining access to 'information or advice to help with the business' and 'introductions to other people' are the main resource benefits that a team-based venture can receive from its diverse membership. Around three-quarters of the teams possess physical resources, whilst less than half of the NETs (44.2%) have gained access to financial assistance through their membership. Over 67.5% of the teams studied reported the benefits of receiving training in business-related tasks/skills or access to business services through their memberships. Of all the resource types included in the analysis, access to financial assistance was rated as the one least provided by the members of the team.

Table 5.3 Resources available to NET by type.

Resources	Frequency	%
Introductions to other people	402	83.75
Information or advice to help with the business	471	98.13
Training in business-related tasks or skills	324	67.50
Access to financial assistance	212	44.17
Physical resources	365	76.04
Business services	311	64.79

Table 5.2 also included information related to member proximity, measured in terms of the relationships each member has with the other members of the team. It showed that 50.3% of the teams are formed by copreneurs, meaning that about half of the sample constitute teams formed by husband and wife or partners living together. The remaining

49.7% are formed by members who are connected to each other through family relationships, friendships or work relationships (colleagues). Although teams formed by strangers are discussed in the literature and formed part of the PSED II measures of team membership, there is no NET in this sample that agrees with the composition defined as having a 'stranger' relationship (see Appendix 5). Like the results presented above around human capital diversity within NETs, these results suggest an approximately equal representation of teams that are closely knit and teams with members outside romantic relationships. There exists only a small and non-significant difference between the numbers of teams from the two types; NETs formed by copreneurs outnumber those NETs formed by other type of relationships by only 0.30%.

In summary, exploring which composition is more prevalent among nascent entrepreneurial teams required an exploratory analysis using four different compositional constructs and their respective variables: demographic diversity (i.e. gender, age and ethnicity), human capital (i.e. education, industry experience, and start-up experience), resource heterogeneity, and familiarity. Overall, the results suggest an over representation of team homogeneity with respect to age, ethnicity, education, industry experience and start-up experience. In contrast, there is an under-representation from gender and resource homogenous NETs meaning that gender and resource heterogeneous NETs are more prevalent. The findings also suggest that of the resource heterogeneity observed among NETs, 'financial assistance' is the least supported resource through heterogonous team arrangements. The analysis suggests an almost equal split between NETs formed by copreneurs and those NETs formed by 'others' (i.e. family relationships, friendships or work relationships).

5.3.2 An analysis of the compositional change of NETs over time

This section explores the composition of NETs at different points in time over the life course of the business (over 5 years). By doing so, it attempts to answer the research sub-question: *What compositional dynamics can be observed in the NET over time?* The variables used in this analysis were the same as the ones used in the previous section. Figure 5.1 to 5.3 illustrate the evolution of each compositional variable from Wave A to Wave F of PSED II. Demographic variables (gender, ethnicity and age) are quite consistent over time. The prevalence of homogeneous compositions on these demographic variables

can be observed along the six waves. For instance, gender-heterogeneous NETs maintain their membership over time in at least 68% of cases. At no time did this value exceed 78%. Likewise, ethnic-homogeneous represented at least 81% and no more than 87% in all the waves. Finally, Figure 5.3 shows that age was constantly homogeneous over time.

Figure 5.1 Nascent Entrepreneurial Teams evolution based on Gender diversity

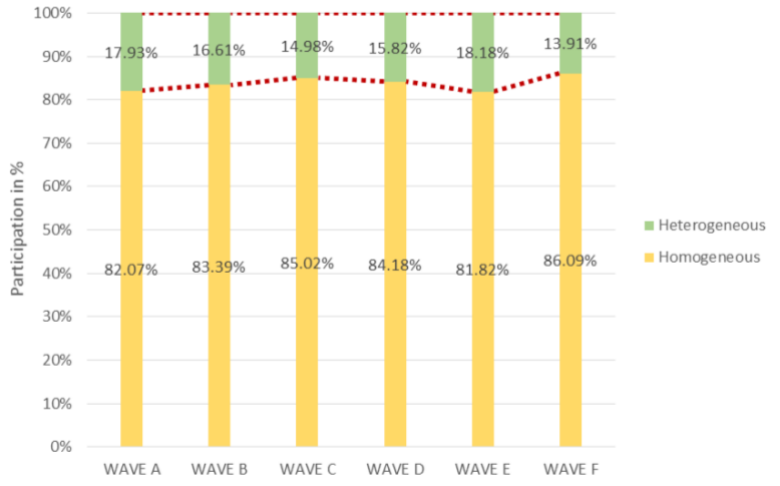


Figure 5.2 Nascent Entrepreneurial Teams evolution based on Ethnicity

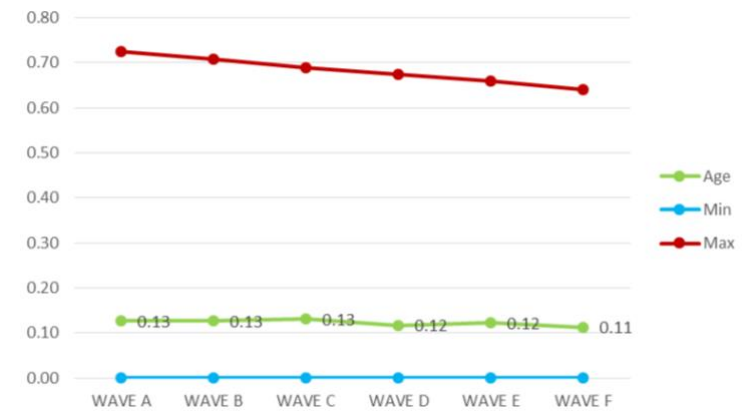


Figure 5.3 Nascent Entrepreneurial Teams evolution based on Age Diversity

Figure **5.4** demonstrates that a relative majority of teams, at least 52%, consistently held a homogeneous level of education. However, there is a fluctuation between heterogeneous and homogeneous composition predominance from one wave to the next when studying industry experience and start-up experience. For instance, Figure **5.5** shows that homogeneous teams in terms of industry experience were more prevalent in Wave A (51%), whereas in Waves B to F heterogeneous teams were more prevalent.

Figure 5.4 Nascent Entrepreneurial Teams evolution based on Education diversity

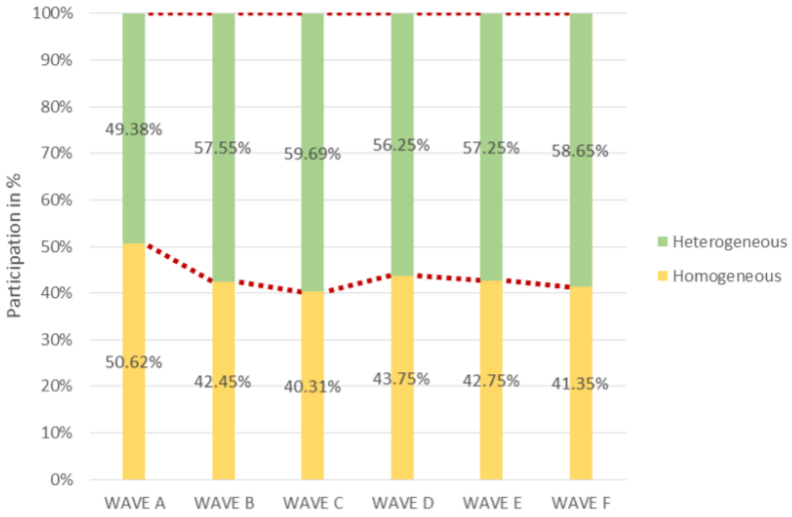


Figure 5.5 Nascent Entrepreneurial Teams evolution based on Industry Experience diversity

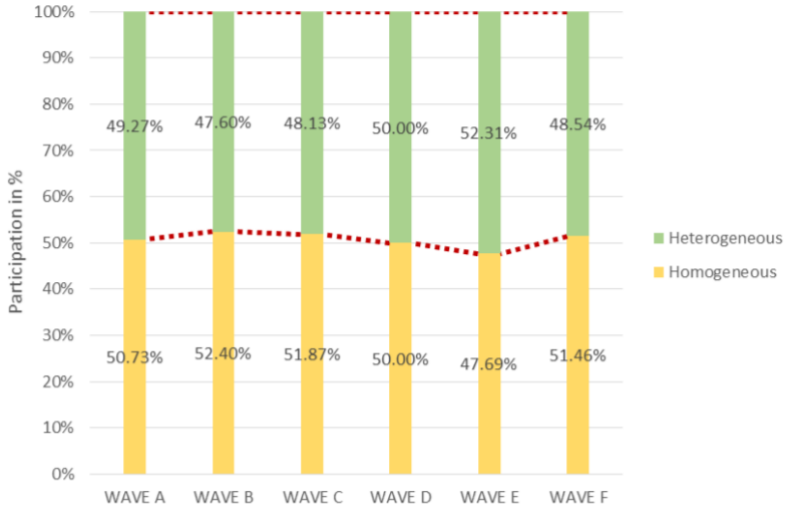


Figure 5.6 Nascent Entrepreneurial Teams evolution based on Start-up Experience diversity

Resource heterogeneity was consistent over time. Figure **5.7** illustrates how resource heterogeneity levels were > 4 throughout the six waves of the study. This further suggests that resource heterogeneity remained relatively high as the minimum value was equal to '0' and the maximum to '6'.

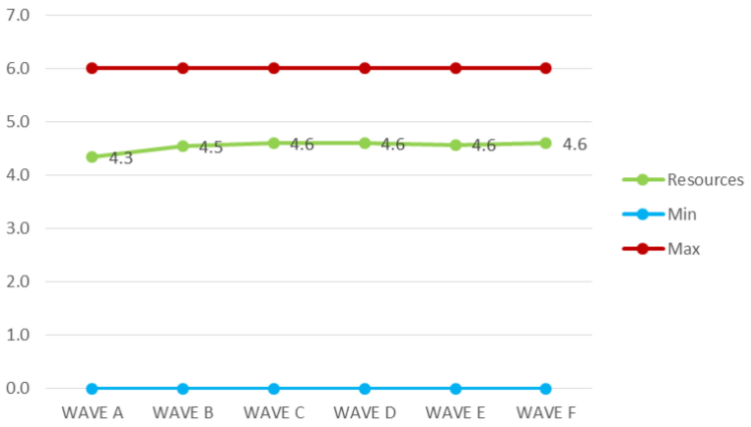


Figure 5.7 Nascent Entrepreneurial Teams evolution based on resource heterogeneity

Looking at the familiarity construct (Figure 5.8), NETs formed by copreneurs represented at least 50% and no more than 61%. This means that teams formed by husband and wife or partners living together are more prevalent.

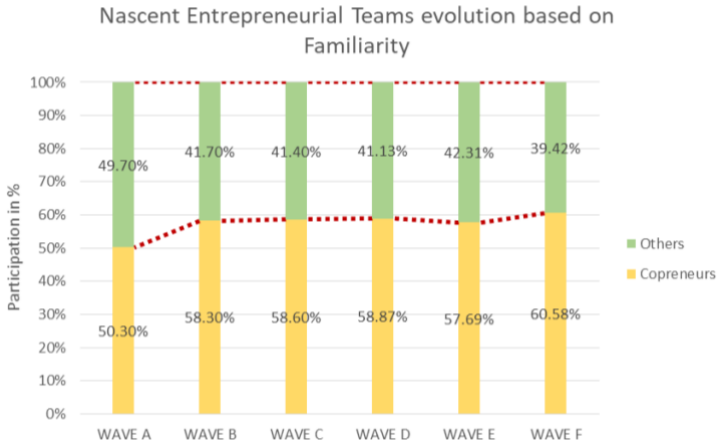


Figure 5.8 Nascent Entrepreneurial Teams evolution based on Familiarity

5.4 Compositional mix: Association between teams of varying compositions

One of the principal aims of this chapter is to identify the prevalent types of NETs, measured in relation to their compositional dimensions. This thesis has been restricted to analysing individual dimensions that determine the nature of the team that is formed. To further explore teams of varying composition, it is important to study associations between various dimensions to identify teams with mixed composition. Therefore, the

following sub-question was formulated: *How do the different compositional constructs used in this study (i.e. demographic diversity, human capital, resource heterogeneity and familiarity) relate to, or influence, each other?*

This section presents the results of the analyses undertaken to answer this research question by studying patterns across the four compositional dimensions. The methodological approach is two-fold: studying the compositional dimensions in pairs and by conditional cross-tabulations. Pearson's chi-square (X^2) was used to investigate whether a significant association or difference exists between pairs of categorical variables, and Cramér's V to investigate the degree of association.[12] This degree of association, ranging from $-1\ to\ 1$ can be determined by:

$$V = \sqrt{\frac{X^2}{N \times \min(R-1, C-1)}} \tag{6}$$

Where X^2 is chi-square, R is the number of rows, C is the number of columns, and N is the sample size (Acock, 2008). The absolute value from the equation can be interpreted as follows:

Table 5.4 Degree of association between variables

Cramér's V (Strength of association)	Values
Weak	$.19 > V$
Moderate	$.19 < V < 0.50$
Strong	$V \geq 0.50$

Pearson's chi-square enables the study of the association or difference between categorical variables. For the chi-square results to be reliable, the data should satisfy certain assumptions. Performing Pearson's chi-square on two dichotomous variables can result in a two-way 2x2 table. In such cases, the results obtained in this thesis fulfil the expected frequency requirements (i.e. all the expected frequencies are greater than 5 and the sample size is greater than 100). Other cases result in two-way $i \times j$ tables, the results

[12] This refers to the likelihood of achieving results due to chance alone or due to true associations (Pevalin and Karen, 2009).

obtained from those cases met the corresponding assumption: <20% of the expected values counts are less than five (Yates *et al.*, 1999).

To study the association and differences between age demographics, and other categorical variables, an independent sample t-test were performed. T-tests provide reliable results under two conditions: a) data for the continuous variable follows a normal distribution, and b) there is homogeneity of variances between groups, i.e. the calculated means in the two groups are equal in the population. The coefficient of variation of age was normalised to fulfil the first assumption. To test for the second assumption, Levene's test for equality of variance was used to determine appropriate t-test results (i.e. equal or unequal t-test values).

5.4.1 By pairs

All possible combinations of paired variables were studied. The eight variables were gender, ethnicity, age, education, industry experience, start-up experience, resource heterogeneity and, familiarity. The results of the cross-tabulations and t-test are presented in Appendix 8 to 14. The eight variables were paired and tested in various combinations, and a high volume of results were produced. The discussion that follows and the results in Table 5.5 and 5.6 report only those pairs that showed a statistically significant association/difference at $p < 0.05, p < 0.01$ *or* $p < 0.001$. Four out of the 21 associations studied revealed statistically significant associations.

Table 5.5 shows that in those pairs that produced statistically significant cross-tabulations, familiarity is a common variable. Familiarity demonstrated significant variations with three other compositional constructs: demographic diversity, human capital, and resource heterogeneity. There are significant differences in the gender compositions between copreneurs and 'others' NETs [$(X^2\ (1, N = 497) = 209.35, p <$ .001), and from the 31.6% of the gender-homogeneous teams, 97.5% have members with family relationships, friendships or work relationships. Conversely, of the 68.4% of gender-heterogeneous teams, 72.4% represent those with romantic relationships. These results indicate that, while gender-homogeneous NETs are more likely to be found in teams formed by 'others', gender-heterogeneous NETs are more prevalent among teams that are owned by copreneurs.

Table 5.5 Significant cross-tabulations and Pearson chi-square between different compositional variables and familiarity (%)

	Familiarity Copreneurs	Familiarity Others				
Gender	**%**	**%**	**Total (%)**	**Chi-square**	**df**	**Cramer's V**
Homogeneous	2.5	97.5	31.6	209.3501***	1	-0.6490
Heterogeneous	72.4	27.6	68.4			
Total Familiarity	50.3	49.7	100.0			
Education	**%**	**%**	**Total (%)**	**Chi-square**	**df**	**Cramer's V**
Homogeneous	57.7	42.3	54.5	9.8585**	1	0.1424
Heterogeneous	43.4	56.6	45.5			
Total Familiarity	50.2	48.8	100.0			
Start-up Experience	**%**	**%**	**Total (%)**	**Chi-square**	**df**	**Cramer's V**
Homogeneous	61.8	38.2	50.6	18.4992***	1	0.1971
Heterogeneous	42.1	57.9	49.4			
Total Familiarity	52.1	47.9	100.0			
Resource Heterogeneity	**%**	**%**	**Total (%)**	**Chi-square**	**df**	**Cramer's V**
0	75.0	25.0	0.8	13.2912*	6	0.1666
1	50.0	50.0	2.5			
2	68.4	31.6	7.9			
3	51.5	48.5	14.2			
Sub Total RH<3	***57.4***	***42.6***	***25.5***			
4	51.9	48.1	21.7			
5	51.4	48.6	30.5			
6	37.4	62.6	22.3			
Sub Total RH>3	***47.3***	***52.7***	***74.5***			
Total Familiarity	49.9	50.1	100.0			

df= degrees of freedom
Significance levels: †<.10; *<.05; **<.01; ***<.001.

Of the familiarity and human capital relationships studied, two out of the three HC variables demonstrated statistically significant differences, even though the strength of these differences are weak to moderate (Cramér's V<0.20). Educational diversity and level of familiarity within teams are significantly different, reporting a chi-square value of $X^2\ (1, N = 486) = 9.8585, p < .01$. This indicates that 54.5% of the teams studied are homogeneous in terms of their education levels, and the remaining 45.5% are heterogeneous. Copreneurial NETs have members with similar educational levels (57.7%) when compared to 'others' teams, whose membership represents individuals with diverse educational background (56.6%). The same was observed for the second human capital variable, industry experience. The level of start-up experience possessed by a team was significantly different between copreneurs and 'others' groups $[\ (1, N = 476) = 18.4992, p < .001]$. Table 5.5 shows that 61.8% of the teams that were homogeneous in terms of start-up experience had spouses or partners living together as members in the team, and the remaining 38.2% were teamed with family relationships, friendships or work relationships. Some, 42.1% of the teams rated as heterogeneous in

terms of their start-up experience had close knit romantic ties, while the remaining 57.9% did not. These results agree with the findings relating to the level of education diversity discussed above. Thus, NETs with copreneurs are more likely to represent a team with similar educational qualifications and backgrounds and start-up experience (homogeneous compositions), while NETs with 'others' represent teams with heterogeneous compositions both in terms of their education levels and start-up experience.

Finally, the chi-square results for the resource heterogeneity and familiarity dimensions are statistically significant at $X^2\ (1, N = 479) = 13.2912, p < .05$. Table 5.5 shows that 74.5% of NETs had high resource heterogeneity (>3) and of those resource-heterogeneous teams, 47.3% were populated by individuals with a romantic relationship and 52.7% with family relationships, friendships or work relationships. The results also indicate that, of the 25.5% NETs with low resource heterogeneity (<3), 57.4% were part of the copreneurs network with the remaining 42.6% part of 'others' networks. Looking at the results overall, the majority (74.5%) had high resource heterogeneity either in copreneurs or 'others' teams. The cross-tabulation results revealed that the closer the relationship between members (in this case spouses or partners living together), the more likely the team is to have low levels of resource heterogeneity.

Table 5.6[13] illustrates the t-test results of those compositional characteristic pairs that were statistically significant at $p < 0.05, p < 0.01$ *or* $p < 0.001$. Only three out of the six pairs were found to show a significant difference in the means. To begin, the mean age of members in a team differs statistically between groups when the groups are studied in relation to their gender compositions $[t(451) = 3.21; p < 0.01]$. Teams whose members were of the same gender (gender-homogeneous group) had a mean logarithmic age equal to -2.24[14], compared with -2.56 for the gender-heterogeneous group. The results presented in Table 5.6 reveal statistically significant mean logarithmic age differences $[at\ t(432) = -4.29; p < 0.001\ ]$ between homogeneous (mean logarithmic age = -2.65) and heterogeneous groups (mean logarithmic age = -2.24) divided based on their start-

[13] Appendix 9 shows the results obtained from every pair regardless of their significance.
[14] Given that the distribution of the age coefficient of variation was normalised, the mean age value is expressed in its logarithm form. Hence, the exponential value for -2.24 and -2.55 are 0.11 and 0.08 respectively.

up experience. The third, and last, pair that provides a statistically significant t-test result is familiarity and age. The mean logarithmic age of members in a team differ significantly $[at\ t(450) = -9.18; p < 0.001]$ between copreneurs (mean logarithmic age= -2.87) and 'others' (mean logarithmic age=-2.07) groups.

Table 5.6 Differences in NET mean age scores by compositional variable (T-test)

	Groups	T-test for equality of Means			
		n	**logarithmic $\bar{X}$** (exponential value)	**SD**	**t-test**
Gender	*Homogeneous*	154	-2.24 (0.11)	1.01	3.21**
	Heterogeneous	297	-2.56 (0.08)	0.99	
Start-up experience (unequal)	*Homogeneous*	217	-2.65 (0.07)	0.96	-4.29***
	Heterogeneous	215	-2.24 (0.11)	1.04	
Familiarity (unequal)	*Copreneurs*	212	-2.87 (0.06)	0.56	-9.18***
	Others	238	-2.07 (0.13)	0.99	

Significance levels using a two-tailed t-test: †<.10; *<.05; **<.01; ***<.001

5.4.2 Conditional cross-tabulations

Conditional cross tabulation and Pearson's chi-square were used to further analyse the four constructs: demographic diversity, human capital, resource heterogeneity and familiarity. The purpose of the conditional cross-tabulation (or three-way table) is to examine the possible relationships between three variables. Appendix 15 to 26 gives a summary of the results obtained. Given that eight variables were combined and tested, a high volume of results was produced, and discussion is limited to those results that are statistically significant at $p < 0.001$ and produce strong associations, i.e. $V \geq .50$.

Four results satisfied these criteria and these results have two variables in common: gender and familiarity. Table 5.7 presents the results between gender and familiarity sorted by ethnicity. Both groups were statistically significant, ethnic-homogeneous groups at $X^2\ (1, N = 388) = 168.94, p < .001$, and ethnic-heterogeneous groups at $X^2\ (1, N = 85) = 39.99, p < .001$. In the ethnic-homogeneous group, 98.5% of the copreneurs were gender-heterogeneous and 62.2% of 'others' were gender-homogeneous. The same tendency was observed for the ethnic-heterogeneous group, where it was noticed that 97.4% of the copreneurs were gender-heterogeneous whereas

70.2% of 'others' were gender homogeneous. Finally, the results indicate that the ethnic-homogeneous groups were gender-heterogeneous (69.6%) and were mainly copreneurs (52.3%).

Table 5.7 Conditional cross tabulation between 'familiarity' and 'gender' by ethnicity

	Ethnic-Homogeneous			**Ethnic-Heterogeneous**		
	Gender Homog.	**Gender Heterog.**		**Gender Homog.**	**Gender Heterog.**	
Familiarity	**%**	**%**	*Total Familiarity (%)*	**%**	**%**	*Total Familiarity (%)*
Copreneurs	1.5	98.5	52.3	2.6	97.4	44.7
Others	62.2	37.8	47.7	70.2	29.8	55.3
Total Gender	30.4	69.6	100.0	40.0	60.0	100.0
Statistical test (X^2)		**168.9425*** **			**39.986*** **	

Significance levels: ***<.001.

In the ethnic-heterogeneous group, teams had a gender-heterogeneous composition (60.0%) and are formed by 'others' type of relationship (55.3%). Overall, the results suggest that gender heterogeneous teams are more prevalent than homogeneous teams when studied by ethnicity in relationship to familiarity. The three-way table further revealed that NETs with closer relationships (copreneurs) are more likely to have an ethnic-homogeneous composition rather than a heterogeneous one.

Table 5.8 presents the results between gender and familiarity sorted by education. The homogeneous-education group with familiarity was significant at $X^2\ (1, N = 265) = 132.60, p < .001$. In this group, a total of 57.7% of teams were formed by copreneurs and, of those, the large majority were gender heterogeneous (98.7%.). 'Others' teams in the homogeneous-education group were most often gender-homogeneous (66.1%). The overall education-homogeneous group had a gender heterogeneous composition (71.3%). Likewise, gender-heterogeneous teams were more prevalent in education-heterogeneous group (66.5%). However, teams formed by family relationships, friendships or work relationships were predominant in teams with education diversity.

A gender-heterogeneity composition was also prevalent when studying other HC variables such as industry experience and start-up experience. As data in Table 5.9 shows, 66.5% of NETs with homogeneous-industry experience were gender-heterogeneous, as were 71.4% of the teams with heterogeneous-industry experience. Table 5.10 also shows 71.8% NETs consisting of members with homogeneous start-up experience were gender-

heterogeneous, while this was 65.1% for teams with heterogeneous start-up experience. Table 5.7– 5.10 show that gender-heterogeneous compositions was prevalent in NETs, whether investigated via ethnicity, the HC variables of education, industry experience, or start-up experience.

Table 5.8 Conditional cross tabulation between 'familiarity' and 'gender' by education

	Education Homogeneous			**Education Heterogeneous**		
	Gender-Homog.	**Gender-Heterog.**		**Gender-Homog.**	**Gender-Heterog.**	
Familiarity	**%**	**%**	*Total Familiarity (%)*	**%**	**%**	*Total Familiarity (%)*
Copreneurs	1.3	98.7	57.7	1.0	99.0	43.4
Others	66.1	33.9	42.3	58.4	41.6	56.6
Total	28.7	71.3	100.0	33.5	66.5	100.0
Statistical test (X^2)		**132.6021*** **			**80.2080*** **	

Significance levels: ***<.001.

Table 5.9 Conditional cross tabulation between 'familiarity' and 'gender' by industry experience

	Industry Experience Homogeneous			**Industry Experience Heterogeneous**		
	Gender-Homog.	**Gender Heterog.**		**Gender-Homog.**	**Gender Heterog.**	
Familiarity	**%**	**%**	*Total Familiarity (%)*	**%**	**%**	*Total Familiarity (%)*
Copreneurs	0.9	99.1	47.8	1.5	98.5	54.6
Others	63.3	36.7	52.2	61.1	38.9	45.4
Total	33.5	66.5	100.0	28.6	71.4	100.0
Statistical test (X^2)		**106.9791*** **			**102.5841*** **	

Significance levels: ***<.001.

Considering industry experience (Table 5.9), teams in the 'others' familiarity category tended to have homogeneous-industry experience (52.2%), while teams formed by spouses and partners living together (i.e. copreneurs) tended to have heterogeneous industry experience (54.6%). Lastly, Table 5.10 presents the results of studying NETs by start-up experience; 61.8% of teams with homogeneous start-up experience were comprised of copreneurs, but only 42.1% of heterogeneous start-up experience were copreneurs. These results are shown to be statistically significant for homogeneous start-up group at $X^2\ (1, N = 241) = 139.17, p < .001$ and for heterogeneous start-up group at $X^2\ (1, N = 235) = 81.37, p < .001$. This provides evidence that copreneurs are more

likely to have heterogeneous industry experience, but a homogeneous composition in terms of start-up experience.

Table 5.10 Conditional cross tabulation between 'familiarity' and 'gender' by start-up experience

	Start-up Experience Homogeneous			Start-up Experience Heterogeneous		
	Gender-Homog.	Gender Heterog.		Gender-Homog.	Gender Heterog.	
Familiarity	**%**	**%**	*Total Familiarity (%)*	**%**	**%**	*Total Familiarity (%)*
Copreneurs	1.3	98.7	61.8	2.0	98.0	42.1
Others	71.7	28.3	38.2	58.8	41.2	57.9
Total	28.2	71.8	100.0	34.9	65.1	100.0
Statistical test (X^2)		**139.2*** **			**81.3737*** **	

Significance levels: ***<.001.

5.5 NETs Profiles/Types

So far, the results presented in this chapter demonstrate which compositional factors were more prevalent in NETs. As part of the exploratory study, descriptive statistics and cross-tabulation analyses were presented to study composition prevalence and interrogate the significant associations and differences between the different constructs. The cross-tabulation analyses proved enlightening; however, it does not facilitate the study of all of the compositional variables at once (i.e. categorical and continuous). The purpose of this section is therefore to address the second research question of this thesis: *What different team profiles or types can be identified among NETs based, on their compositional dimensions?* To answer this question, cluster analysis was the method selected in this study.

Cluster analysis is a multivariate statistical method used to identify patterns within individuals and group them into 'clusters' based on their similarity to each other (Norušis, 2012). There are a number of techniques, and this thesis used a TwoStep[15] clustering procedure. As the name suggests, the technique is developed in two stages. First, a 'pre-cluster' solution is sought to "reduce the size of the matrix that contains distances between all the possible cases" (Tkaczynski, 2017, p.110). During this stage, a decision is made between using either an Euclidian algorithm (for exclusively continuous variables cluster analysis) or a log-likelihood algorithm (when using continuous and categorical

[15] This particular test was performed by using SPSS statistical software instead of STATA.

variables for clustering) (Norušis, 2012). During the second step, the pre-clusters are again clustered by hierarchical clustering algorithm: "this stage produces a range of solutions which is then reduced to the best number of cluster based on the Schwarz's Bayesian Information Criterion (BIC)" (Tkaczynski,2017, p. 110). At the same time, chi-square is used to test for categorical variables and t-test for continuous variables to corroborate if the clusters are internally homogenous and externally heterogeneous. This enables the identification of properties and characteristics of the individuals within each cluster which can offer meaningful explanation of the cluster membership.

The first analysis was performed using seven of the eight variables: gender, age, ethnicity, education, industry experience, start-up experience, and familiarity. In regards to resource heterogeneity, dichotomous variables for each type of resource were included to add more detail regarding the resource-related compositional construct as both clusters have a resource heterogeneity average value above four. The analysis relied on the Schwarz's BIC to determine the number of clusters and avoid any subjectivity.

According to BIC, two clusters were identified as the most reliable clustering representation for the studied sample.[16] Table 5.11 presents the distribution of 388 cases from which Cluster 1 and Cluster 2 were almost evenly distributed.

Table 5.11 Cluster distribution

		N	% of Combined	% of Total
Cluster	***1***	196	50.5	39.2
	2	192	49.5	38.4
	Outlier (-1)	0		
	Combined	388	100.0	77.6
Excluded Cases		112		22.4
Total		500		100.0

The analysis fulfilled the requirements of the level of relationship expected of variables within and between clusters, as demonstrated by a fair-silhouette measure of cohesion[17] equal to 0.2. Consistent with the cross-tabulation results, familiarity (1.0) and gender

[16] SPSS calculated different solutions and selects the one with the highest value of ratio of distance measures (2.788). See Appendix 27.

[17] 'A silhouette measure less than 0.20 indicates a poor solution quality, a measure between 0.20 and 0.50 a fair solution, whereas values of more than 0.50 indicate a good solution' (Sarstedt and Mooi, 2010, p. 280)

(0.47) were the most significant predictors to differentiate the clusters. However, seven out of 13 reported a value ≤ 0.02; ethnicity, industry experience and five out of six types of resources, suggesting that this cluster solution does not fulfil the internally homogeneous and external heterogeneous criteria essential to validate cluster models. As these variables did not contribute to the prediction of the clusters (see Appendix 29), a second run of the analysis was performed excluding these variables. By doing so, the good-silhouette value improved to 0.4. This means that the second model is more suitable for determining the profiles and types of NETs.

Table 5.12 presents the distribution of 417 cases, of which Cluster 1 represents 50.8% of the cases and Cluster 2 represents the remaining 49.1%. The table also reports the X^2 *or* $t-test$ values, to validate that the two clusters are statistically different at $p<0.05$, $p<0.01$ or $p<0.001$. As illustrated in Figure **5.9**, Cluster 1 and Cluster 2 are different from a compositional perspective. The results obtained from this cluster analysis enables the provision of a typology of NETs.

The cluster analysis shows that the level of familiarity is the main predictor when differentiating the two clusters. Thus, Cluster 1 is dominated by teams composed of 'others' (i.e. family, friends, and colleagues), Cluster 2 by teams composed of copreneurs. Therefore, it is not surprising that gender came up as the second predictor. Cluster 1 is vastly gender-homogeneous, whereas Cluster 2 is mostly gender heterogeneous.

Although age emerged as the third predictor, it did not reflect any substantial difference in terms of diversity. By calculating their exponential values, it becomes clearer that both profiles and types of NETs have a homogeneous composition in terms of age. However, the difference between them is statistically significant. Moreover, start-up experience (the fourth predictor) and education (the sixth predictor) also played an important role when differentiating the clusters. A team formed by copreneurs and with a gender-heterogeneous composition is homogeneous when studied by these HC variables (education and start-up experience), but teams formed by family, friends, and colleagues tend to be heterogeneous in terms of education and industry experience. Finally, 'access to financial assistance' appeared as the fifth predictor. This resource tended to be present for teams that were comprised of family, friends and colleague members, were gender-homogeneous, and were heterogeneous in their start-up experience and education levels.

Table 5.12 Cluster calculated by six variables

	Predictor importance		Cluster		X^2 *or* $t-test$
			1	***2***	
Size			50.8% (212)	49.1% (205)	
Familiarity	***1.00***	Copreneurs	0.5% (1)	99.5% (205)	**413.018*** **
		Others	100.0% (211)	0% (0)	
Gender	***0.46***	Homogeneous	98.6% (136)	1.4% (2)	**187.861*** **
		Heterogeneous	27.2% (76)	72.8% (203)	
Age (ln)	***0.20***	Mean	-2.0348	-2.8832	**9.325*** **
Start-up experience	***0.04***	Homogeneous	41.8% (89)	58.2% (124)	**14.285*** **
		Heterogeneous	60.3% (123)	39.7% (81)	
Access to financial resources (4)	***0.04***	Yes	60.5% (112)	39.5% (73)	**12.521*** **
		No	43.1% (100)	56.9% (132)	
Education	***0.03***	Homogeneous	43.7% (100)	56.3% (129)	**10.452** **
		Heterogeneous	59.6% (112)	40.4% (76)	

The predictors are organised by overall importance

Significance levels: *<.05; **<.01; ***<.001

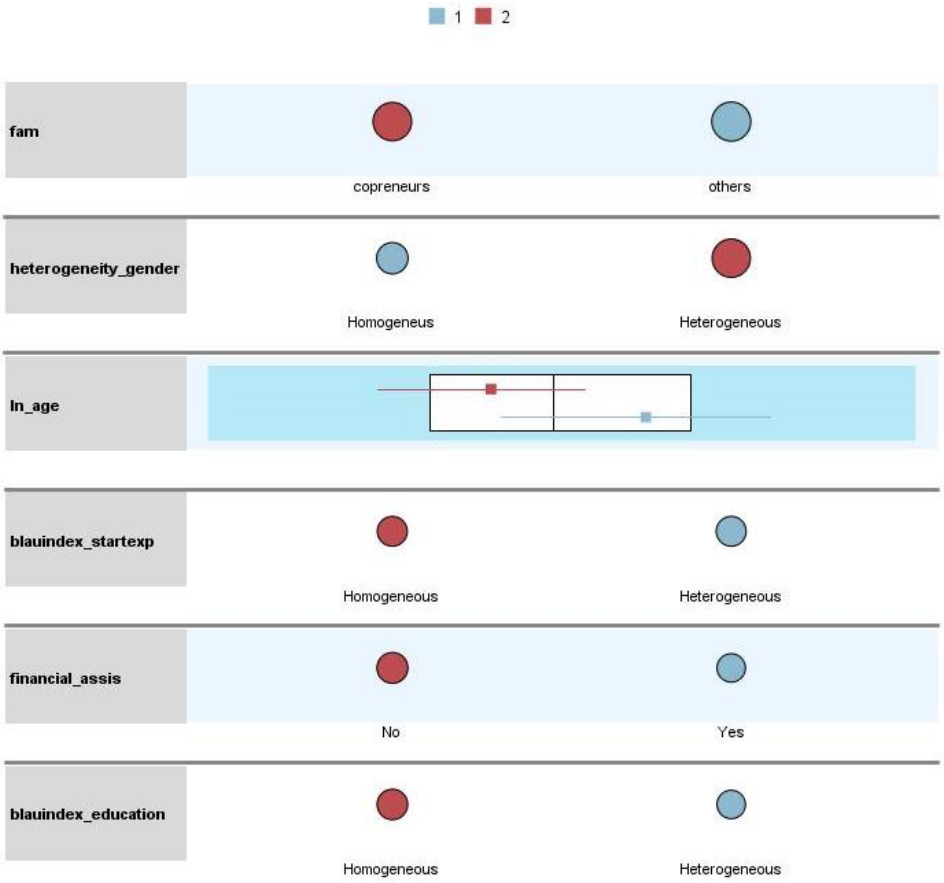


Figure 5.9 Cluster comparison six variables model

A) *NETs Cluster 1*: The nascent entrepreneurial teams in this cluster were formed by members who were connected to each other through family relationships, friendships or work relationships (colleagues). Therefore, the teams in this cluster were most often formed around non-romantic types of relationship. The prevalence of gender-homogeneous composition combined with age-homogeneous levels (exponential value = 0.13) indicates that this cluster is predominantly homogeneous in term of its demographics.

In terms of human capital, NETs in this cluster were revealed to be more diverse. These teams were characterised by heterogeneous start-up experience and heterogeneous education. These results are consistent with the conditional cross tabulations but contradict the overall sample tendencies. Lastly, access to financial assistance made a notable difference between clusters. In this case, the NETs have

access to financial assistance such as equity, loans, or loan guarantees to help with the start-up.

Overall, this cluster is characterised by members categorised as 'others' who start a venture with people who possesses similar demographic characteristics, but different educational background and start-up experience.

B) *NETs Cluster 2*: NETs in this cluster are exclusively composed of copreneurs. This means that this cluster is composed of husband and wife couples or partners living together. Moreover, age demographics were more homogeneous than in Cluster 1 (age exponential value=0.06). Likewise, human capital was homogeneous when observing levels of education and start-up experience. Despite their tendency to be a homogeneous composition in terms of these two HC proxies, teams often reported heterogeneous industry experience composition. This variable was removed from the final exercise as it was not significant as a predictor. Table 5.12 demonstrates that half of the teams reported a lack of access to financial assistance. Even though the teams in this cluster often appeared bereft of access to financial resources, there is evidence to suggest they have at their disposal the other five types of resources: introduction to other people, information or advice, training, physical resources, and business services (see Appendix 29).

   This cluster includes teams formed by copreneurs that have heterogeneous and homogeneous demographic characteristics. These teams are formed by individuals with similar HC. Furthermore, the lack of access to financial resources did not seem to discourage the individuals who became part of the NET.

5.6 Summary

This chapter has explored NET compositions by studying the individual team member and their team. The descriptive statistics helped to explain the structure of the dataset and identify what types of compositions were more prevalent in NETs. Table 5.13 illustrates which composition is more prevalent for NETs by studying four constructs: demographic diversity, human capital, resource heterogeneity and familiarity. It shows that heterogeneous compositions are more prevalent when it comes to gender and resources. However, the other two demographics (age and ethnicity) and the human

capital variables (education, industry experience and start-up experience) reported that homogeneous compositions were more common. Finally, there was no clear distinction between teams of copreneurs and 'others' (family, friends, and colleagues).

Table 5.13 What types of composition are prevalent in NETs?

Demographic Diversity	***Gender***	✓	
	Age		✓
	Ethnicity		✓
Human Capital	***Education***		✓
	Industry Experience		✓
	Start-up Experience		✓
Resource Heterogeneity	***Resources***	✓	
Familiarity/Physical proximity	***Familiarity***	✓	✓

This chapter also has examined what type of NET composition was more prevalent throughout the life span of PSED II. Gender, age, ethnicity, education, resource heterogeneity, and familiarity were consistent, but industry, and start-up experience varied over time, although not significantly.

The chapter has analysed any possible associations and differences between variables. As a result, four of the 21 possible combinations from the seven categorical-interval variables came up as statistically significant, and familiarity appeared as the most relevant determinant in each statistically significant pair. The t-test performed for the categorical-continuous variables indicated that three of the six sets of pairs were statistically significant. The two categories studied in terms of gender, start-up experience and familiarity revealed a significant difference in the mean age.

Conditional cross-tabulation helped to unveil other significant relationships when studying three-way tables. For instance, the results showed that, regardless the ethnical group or HC variable, gender-heterogeneous NETs remain prevalent. This affirmation is true so long as the entrepreneurial effort is performed by copreneurs.

Lastly, by analysing the four constructs through the cluster analysis, this thesis identified two types of NETs. These results are consistent with the cross-tabulation findings, however, the cluster solutions offered further explanations for the membership profile of each team. Familiarity remained as the strongest construct, followed by gender, age and start-up experience to differentiate the clusters. By including resources independently, the cluster analysis revealed that 'access to financial assistance' was a statistically significant predictor to differentiate the clusters.

Chapter 6. Analysis of Nascent Entrepreneurial Team Success

6.1 Introduction

This chapter addresses research question three: *what effect does NET composition have on nascent entrepreneurial success?* This question is investigated using logistic and multiple linear regression models using different dependent variables to portray success. Further analysis was undertaken to study how the variation in team composition could influence the success dimensions differently from one team type to another characterised by their compositional profiles. It concludes by providing a summary of the findings based on the four different compositional constructs, the two clusters, and the different outcomes used to capture success.

6.2 The three dimensions of NET success

As mentioned in Chapter 3, success is a difficult concept to operationalise in the nascent entrepreneurial context. Success in the nascent stage does not necessarily represent or guarantee that the start-up is stable; it is only an indicator that the venture has reached a stage where certain milestones have been passed, an indication of the stability of the venture with potential positive future outcomes. This study considers a number of outcome measures as each can yield different results. Following the guidelines from the existing nascent entrepreneurial literature, and in consultation with the variables studied in the PSED II data set, the thesis uses three measures to capture success: first sales, profitability type I, and profitability type II. The first refers to the question of whether or not a nascent business has achieved its first sale. Profitability is measured by two different variables: one captures if the monthly revenue exceeds monthly expenses (type I), and the other if monthly revenue not only exceeds monthly expenses but also includes the owners' salaries (type II). To address the third research question, logistic regression and linear regression models were considered. The logistic regression reveals if and how team composition affects nascent entrepreneurial outcomes regardless of time. To do this, the three outcome measures were coded to represent dichotomous variables. This means that in logistic regression models, the success is a measure of either a '1' or a '0'. The multiple linear regression analysis captures compositional constructs that help to explain the variation in the time taken to achieve the outcome. To allow this analysis to

be undertaken, the dependent variable is calculated as the time elapsed from the moment the NET started to think about the new business to the achievement of success (success measured by the three milestone measures used in logistic regression). In summary, while logistic regression is used to study how compositional constructs influence the nascent entrepreneur's achieving the three milestones, the linear regression models study the time that takes to achieve each milestone in relation to the compositional dimensions of interest.

The first section of the chapter presents the results of the NET success measured through achieving the first sale and the time taken to achieve this. The second section reports the results from the analysis conducted to study success in terms of profitability and the time taken to achieve these milestones. The third section reports the results from the analysis undertaken to study the differences of the three dimensions used to measure success and the clusters identified in Chapter 5. The results from the logistic and multiple linear regression are reported for each construct separately: demographic diversity, human capital, resource heterogeneity and familiarity. This was made necessary due to come multicollinearity issues of data. All the models discussed include the same control variables: team size, industry, mean work hours and teams' motivation to start a business.

6.3 NET composition and success relationships

Table 6.1 shows the distribution of data in relation to whether or not a NET has achieved each of the three outcome measures. The results demonstrate that the positive achievements in the first milestone (first sales) leads to positive and negative results in the second (profitability type I); the results showed that 333 cases (66.6%) achieved the first sale and, of these who achieved the first sale, 222 (66.7%) achieved profitability type I, and 111 did not. Of the 222 that achieved profitability type I, only 130 (58.6%) reached profitability type II. Overall, the three outcomes have a very similar distribution. This means that when observing each outcome individually, more than half of the NETs have achieved success. At least half of the teams studied in this thesis have made progress, yet the questions regarding the effect of team composition on the outcome measures remains unanswered.

Table 6.1 Outcomes distribution

Success variable		Frequency	%
First Sale	Yes (=1)	333	66.6
	No (=0)	167	33.40
	Total	500	100.0
Profitability type I[A]	Yes (=1)	222	66.7
	No (=0)	111	33.3
	Total	333	100.0
Profitability type II[b]	Yes (=1)	130	58.6
	No (=0)	92	41.4
	Total	222	100.0

[a] *Monthly revenue exceeds monthly expenses*

[b] *Monthly revenue exceeds monthly expenses and owners' salaries*

Before presenting the results from the inferential analyses, the assumptions for logistic and linear multiple regression were tested, and the Pearson pairwise correlation coefficients are reported in Appendix 31. The correlation results show the relationship between the selected controls, independent and dependent variables in a bivariate space. The majority of the results show a low to moderate correlation, indicating that multicollinearity should not be an issue. However, there is only one bivariate correlations that reported a strong value. The correlation statistics show that family correlates negatively with gender ($r = -0.649, p < .001$). Yet, according to Field (2013), these results are not concerning as the values are <0.80. To discard any possible concern for multicollinearity (a violation of regression assumption), the variance inflation factor (VIF) was calculated for all the control and independent variables used in regression models (See Appendix 32, 39 and 43). VIF indicates if the variance in one variable is inflated by the variance of other variables (Hair *et al.*, 1998). Acock (2008) states that a rule of thumb is that VIF scores above 10 suggest a multicollinearity problem. Others propose that a score below 4 is more suitable (O´brien, 2007). Following the more restricted criterion (VIF <4), the results show that all the VIF values were well below the threshold multicollinearity level. Finally, each model was tested for heteroscedasticity which suggests constant variance. The residuals from all models were normally distributed, confirming that linear regression assumptions are not violated.

6.3.1 First sales as a measure of success

6.3.1.1 Demographic Diversity

The demographic variables studied in this thesis are gender, age and ethnicity. Table 6.2 shows that the three models are statistically significant ($p < 0.001$). Models 1 to 3 test the effects of each demographic variables on achieving first sale, while Model 4 shows the overall demographic diversity effect on achieving this outcome.

Table 6.2 The effect of Demographic Diversity on NETs first sale using Logistic Regression

First Sale	**Model 1**		**Model 2**		**Model 3**		**Model 4**	
	Z-score (*SE*)	**O.R.**	**Z-score (*SE*)**	**O.R.**	**Z-score (*SE*)**	**O.R.**	**Z-score (*SE*)**	**O.R.**
Controls								
Team Size	-1.69†	0.774	-1.95†	0.731	-1.15	0.834	-1.46	0.784
	(0.152)		(0.161)		(0.158)		(0.167)	
Trading[1]	-1.69†	0.584	-1.34	0.636	-1.52	0.609	-1.32	0.630
	(0.319)		(0.338)		(0.327)		(0.349)	
Service[1]	-0.8	0.802	-1.05	0.737	-0.96	0.762	-1.18	0.701
	(0.275)		(0.291)		(0.283)		(0.301)	
Opportunity[2]	-0.87	0.812	-0.69	0.842	-0.83	0.817	-0.61	0.856
	(0.239)		(0.249)		(0.244)		(0.256)	
Necessity[2]	-2.99**	0.384	-2.20*	0.469	-3.08**	0.365	-2.50*	0.414
	(0.321)		(0.343)		(0.328)		(0.352)	
Mean work hours (ln)	7. 26***	1.729	6.88***	1.711	6.80***	1.690	6.44***	1.684
	(0.075)		(0.078)		(0.077)		(0.081)	
Independent variables								
Gender (=1)	**1.69†**	1.480					1.58	1.482
	(0.232)						(0.248)	
Age diversity (ln)			0.92	1.118			1.07	1.142
			(0.121)				(0.124)	
Ethnicity (=1)					**-1.83†**	0.595	-1.47	0.642
					(0.284)		(0.301)	
_const	-2.43*	0.247	-0.98	0.512	-1.82†	0.349	-1.13	0.442
	(0.576)		(0.683)		(0.578)		(0.723)	
Team	470		423		446		404	
Observations								
Pseudo R[18]	0.1440		0.1307		0.1297		0.1289	
LR Chi2 (df)	84.97*** (7)		69.23*** (7)		71.78*** (7)		64.42*** (9)	

Significance levels: †<.10; *<.05; **<.01; ***<.001
Gender (=1) refers to heterogeneous teams.
Ethnicity (=1) refers to ethnically heterogeneous teams.
[1] The reference category represents manufacturing
[2] The reference category represents those entrepreneurs which motivation to start a business come from both, the business decision and business idea.

Model 1 demonstrates that gender has a positive and significant coefficient ($b = 0.39, p < 0.1$), suggesting that NETs with gender-heterogeneous compositions are more

[18] This is the McFadden (1974) pseudo-R^{18} which is different from the R^{18} value reported in linear regression. This value represents how much larger log likelihood is for the final solution.

likely to achieve first sale compared to gender-homogeneous teams. The odds of success for a gender heterogeneous team are 48.0% higher compared to a gender-homogeneous team. Model 2 shows that age diversity ($b = 0.11, n.s.$) is not significantly related to success when measured by first sale. Model 3 shows that ethnicity has a negative and statistically significant coefficient ($b = -0.52, p < 0.1$), which means that having an ethnically heterogeneous NET composition reduces the odds to make first sale by 40.5% compared to an ethnically homogeneous NET.

Two of three demographic characteristics when analysed individually were found to be statistically significant (gender and ethnicity). However, Model 4 demonstrates that when the three variables are simultaneously included in the model, the two predictors are no longer significant. This could be as a result of one predictor impacting on the variance of other predictors. Of the control variables included in Table 6.2, the mean number of work hours the entrepreneurs spent on team effort is positively related to achieving the first sale ($b = 0.52, p < 0.001$) in the four models. Similarly, teams motivated by necessity have a negative and statistically significant coefficient ($b = -0.88, p < 0.05$).

Overall, two demographic compositional dimensions, gender and ethnicity, have an effect on the success when success measured in terms of making the first sale. While gender-heterogeneous teams contribute to the nascent business' success positively, ethnic-heterogeneous teams affect the probability of achieving first sale negatively. This means that teams with an ethnically homogeneous composition are more likely to succeed compared to heterogeneous ones. The contribution from both these dimensions to the model explanation however become non-significant when all dimensions are included simultaneously. Age diversity has no effect on achieving first sale, whether tested individually or with other demographic measures.

Since gender and ethnicity are statistically significant, these variables were further analysed. Gender, for instance, was studied by a categorical variable that no longer reflects heterogeneous vs homogeneous teams, but has more specific categories (only male, male dominant, only female, female dominant and mixed). Consistent with the previous exercise, mixed-gender teams were set as the category of reference. The results of the logistic regression are presented in Table 6.3. Data in Model A shows that gender-

homogeneous teams are less likely to achieve first sale compared to gender-heterogeneous teams. However, the success relationship for teams composed exclusively of women are statistically significant ($b = -1.10, p < 0.05$). This means that NETs composed of women decrease the odds by 66.5% to achieve success compared to gender-heterogeneous teams. This further indicates that of the gender-homogeneous NETs, only-women teams have significantly lower odds of achieving first sale compared to gender-heterogeneous teams.

Table 6.3 The effect of significant variables on NETs First sale using Logistic Regression

First Sale	Model A		Model B	
	Z-score (*SE*)	**O.R.**	**Z-score (*SE*)**	**O.R.**
Controls				
Team Size	-0.80 (0.188)	0.860	-1.23 (0.159)	0.823
Trading[1]	-1.55 (0.322)	0.607	-1.50 (0.327)	0.612
Service[1]	-0.86 (0.277)	0.789	-0.85 (0.285)	0.785
Opportunity[2]	-0.80 (0.240)	0.826	-0.75 (0.245)	0.831
Necessity[2]	-3.08** (0.324)	0.368	-2.99** (0.329)	0.373
Mean work hours (ln)	7.30*** (0.076)	1.741	6.79*** (0.077)	1.690
Independent variables				
Gender[3]				
Only Males	-1.19 (0.260)	0.734		
Male-dominated	-0.67 (0.504)	0.714		
Female-dominated	-0.83 (0.692)	0.563		
Only Females	**-2.33* (0.470)**	**0.335**		
Ethnicity[4]				
White			**1.96† (0.287)**	**1.758**
Other ethnicities			0.30 (0.452)	1.144
_const	-2.06* (0.597)	0.293	-2.43* (0.644)	0.209
Team Observations	470		446	
Pseudo R	0.1496		0.1318	
LR Chi2 (df)	88.30*** (10)		72.94 *** (8)	

Significance levels: †>.10; *>.05; **>.01; ***>.001

[1] The reference category represents manufacturing

[2] The reference category represents those entrepreneurs which motivation to start a business come from both, the business decision and business idea.

[3] The reference category is mixed gender teams

[4] The reference category is mixed ethnicity teams

Ethnicity was studied by differentiating the ethnically homogeneous teams. However, the representation of ethnically homogeneous teams for Hispanics, African-American, American Indian, Asian, and Pacific Islanders is not sufficient. Therefore, ethnic homogeneous teams are divided as white and teams that are composed of the same ethnicity except white. The mixed ethnic group was set as the reference category. Model 3 (Table 6.2) shows that ethnically homogeneous teams are more likely to achieve first sale compared to heterogeneous teams. Model B (Table 6.3) further shows that, from the two ethnically homogeneous compositions, NETs composed of white-ethnic individuals are 75.8% more likely to achieve first sale compared to mixed-ethnic teams. This finding is statistically significant at $b = 0.56, p < 0.10$. The rest of the ethnically homogeneous teams do have a positive coefficient, indicating that they are also more likely to achieve first sale. However, this result is not statistically significant ($b = 0.14$, n. s.).

6.3.1.2 Human Capital

Human Capital diversity was tested using three measures: education, industry experience and start-up experience. Like demographic diversity, these variables were tested individually in Models 5 to 7 (Table 6.4) and in combination in Model 8.

Table 6.4 shows that the four models were statistically significant ($p < 0.001$). However, only one of the three measures can significantly predict success. Model 5 shows that heterogeneous NETs in terms of education have a significant negative effect ($b = -0.56, p < 0.05$). Thus, NETs that are composed of team members with diverse education levels reduce the odds of achieving first sale by 42.9% compared to teams formed by individuals with the same level of education. This effect remains, and the probability decreases even more when the experience predictors are included (see Model 8). In the presence of experience in the model, the negative coefficient of education is more significant ($b = -0.77, p < 0.01$), and the education-heterogeneous team's odds of achieving first sale decreases to 53.5% compared to education-homogeneous teams.

Models 6 and 7 test for industry and start-up experience in relation to nascent success, but none of the indicators show a significant relationship, although industry and start-up experience show a positive effect. This means that NETs heterogeneous in terms of overall experience are more likely to succeed than homogeneous teams. Still, this effect

is not statistically significant.

In terms of controls, the average time team members are active in the business and teams motivated by necessity are statistically significant. The mean work hours that the team members spend in the effort increases the odds of achieving first sale, while entrepreneurs motivated by necessity decreases the odds of success. The effect of these two controls can be observed in Models 5 to 8.

Table 6.4 The effect of Human Capital on NETs' first sale using Logistic Regression

	Model 5		**Model 6**		**Model 7**		**Model 8**	
First Sale	**Z-score (*SE*)**	**O.R.**	**Z-score (*SE*)**	**O.R.**	**Z-score (*SE*)**	**O.R.**	**Z-score (*SE*)**	**O.R.**
Controls								
Team Size	-1.25 (0.158)	0.821	-1.44 (0.156)	0.799	-1.68† (0.165)	0.758	-1.06 (0.172)	0.834
Trading[1]	-1.81† (0.326)	0.554	-1.44 (0.323)	0.628	-1.69† (0.324)	0.579	-1.48 (0.336)	0.608
Service[1]	-0.96 (0.283)	0.762	-0.92 (0.278)	0.773	-0.96 (0.283)	0.761	-1.07 (0.292)	0.731
Opportunity[2]	-0.95 (0.243)	0.793	-0.88 (0.242)	0.808	-0.92 (0.244)	0.799	-1.01 (0.252)	0.775
Necessity[2]	-2.57* (0.326)	0.433	-2.80** (0.327)	0.401	-3.12** (0.328)	0.359	-2.79** (0.337)	0.391
Mean work hours (ln)	7.26*** (0.077)	1.746	6.91*** (0.075)	1.684	7.00*** (0.077)	1.712	6.68*** (0.079)	1.693
Independent variables								
Education (=1)	**-2.47* (0.227)**	**0.571**					**-3.23** (0.237)**	**0.465**
Industry Experience (=1)			1.10 (0.221)	1.274			1.11 (0.231)	1.294
Start-up Experience (=1)					1.14 (0.230)	1.299	1.24 (0.238)	1.345
_const	-1.79† (0.566)	0.364	-2.02* (0.571)	0.315	-1.94† (0.574)	0.329	-1.66 (0.606)	0.367
Team Observations	460		457		450		436	
Pseudo R2	0.1514		0.1281		0.1369		0.1508	
LR Chi2 (df)	87.47*** (7)		72.58*** (7)		77.05***(7)		81.35***(9)	

Significance levels: †>.10; *>.05; **>.01; ***>.001.

The three HC variables (=1) refer to heterogeneous teams

[1] The reference category represents manufacturing

[2] The reference category represents those entrepreneurs which motivation to start a business come from both, the business decision and business idea.

Overall, the two measures related to team experience did not show a significant effect in relation to achieving the first sale. Education showed a negative and significant result,

and this effect increased when other HC proxies were added to the model. To further explore the effect of education on success, a second logistic regression was run using the same education variable but coded in such a way that it allows further elaborations on the role of education on success. Thus, this variable allowed identification of three types of homogeneous teams according to the level of education (basic, medium and high). Mixed education level was set as the reference category.

Table 6.5 The effect of HC significant variables on NETs' first sale using Logistic Regression

First Sale	Model C	
	Z-score (*SE*)	**O.R.**
Controls		
Team Size	-1.25 (0.158)	0.821
Trading[1]	-1.81† (0.326)	0.555
Service[1]	-1.01 (0.284)	0.751
Opportunity[2]	-0.99 (0.243)	0.786
Necessity[2]	-2.58* (0.327)	0.431
Mean work hours (ln)	7.23*** (0.077)	1.742
Independent variables		
Education[3]		
Basic level[4]	1.23 (0.346)	1.529
Medium level[5]	**2.23* (0.261)**	**1.787**
High level[6]	1.51 (0.501)	2.134
_const	-2.57* (0.604)	0.212
Team Observations	460	
Pseudo R	0.1520	
LR Chi2 (df)	87.85***(9)	

Significance levels: †>.10; *>.05; **>.01; ***>.001.

[1] The reference category represents manufacturing.

[2] The reference category represents those entrepreneurs which motivation to start a business come from both, the business decision and business idea.

[3] The reference category is mixed education level.

[4] Basic level=Up to eighth grade, some high school or high school degree

[5] Medium level= Technical or vocational degree, some college, community college degree, or bachelor degree.

[6] High level= Master degree, Law, MD, PhD, EDD degree.

Table 6.5 further shows that NETs with homogeneous levels of education can support positive outcomes. For instance, NETs formed by members with a basic level of education

were 52.9% more likely to achieve success compared to mixed-educated teams. This effect however is not statistically significant. Only one of the three types of homogeneous teams reported a statistically significant value. NETs formed by team members with a medium level of education (i.e. technical or vocational degree, some college, community college degree or bachelor degree) were 78.7% more likely to achieve a first sale compared to mixed-educated teams. This finding was statistically significant at $b = 0.58, p < 0.05$.

Education diversity decreased the odds of achieving first sale. Moreover, when studying this variable in more detail, not all the homogeneous types have a significant impact when compared to the heterogeneous type. Rather, NETs with a medium level of education seem to be the most promising type to achieve this outcome.

6.3.1.3 Resource Heterogeneity

The level of diversity in terms of resources had a positive effect on achieving first sale (see Table 6.6). This relationship was highly statistically significant at $p < 0.001$. This shows that resource heterogeneity has a positive and statistically significant effect ($b = 0.34, p < 0.001$) on the dependent variable, meaning that the higher resource heterogeneity levels of the NET membership the better the prospects of achieving the first sale.

As per results in Models 1 to 8, Model 9 also reports two controls as significant: mean work hours spent in the business and necessity entrepreneurs. The first control reported a positive relation to the dependent variable ($b = 0.44, p < 0.001$), while the second was negatively related ($b = -0.94, p < 0.01$). Model 9 reports a third control variable with a significant coefficient: team size. This control variable was negatively related to first sale ($b = -0.38, p < 0.05$) with an odd ratio of 0.687. This implies that larger teams are less likely to achieve the first sale compared to smaller teams.

Model 9 reports the effects of resource heterogeneity on the prospects of achieving the first sale. The results are positive and significant, indicating that NETs with high levels of resource heterogeneity have better odds of making the first sale. Hence, it is worth looking at the variable in more detail.

Table 6.6 The effect of Resource Heterogeneity on NETs' first sale using Logistic Regression

	Model 9	
First Sale	**Z-score (*SE*)**	**O.R.**
Controls		
Team Size	-2.4* (0.157)	0.687
Trading[1]	-1.55 (0.328)	0.601
Service[1]	-0.79 (0.286)	0.797
Opportunity[2]	-0.95 (0.246)	0.791
Necessity[2]	-2.87** (0.328)	0.391
Mean work hours (ln)	5.48*** (0.080)	1.547
Independent variables		
Resource Heterogeneity	**3.88*** (0.088)**	**1.405**
_const	-2.81** (0.603)	0.183
Team Observations	455	
Pseudo R2	0.1599	
LR Chi2 (df)	91.32*** (7)	

Significance levels: †>.10; *>.05; **>.01; ***>.001.
[1] The reference category represents manufacturing
[2] The reference category represents those entrepreneurs which motivation to start a business come from both, the business decision and business idea.

Table 6.7 offers a detailed assessment of the resource dimensions by taking the individual resource measures separately. There are six types of resources: introductions to other people; information or advice to help with the business; training in business-related tasks or skills; access to financial assistance; physical resources, and business services. Each resource is measured as a dichotomous variable where '1' indicates that the resource is available and '0' indicates that the resource is not present in the NET.

According to Model C, all the resources were positively related to the odds of achieving the first sale. Three measures were found to be statistically significant: NETs with members who could *introduce their business to other people* are 2.1 times more likely to achieve success ($b = 0.74, p < 0.05$), when compared to those teams that do not have this resource. NETs that had *physical resources* at their disposal are 2.1 times more likely to finalise first sale compared to the teams that do not count with *physical resources* ($b = 0.73, p < 0.01$)]. *Access to financial assistance* was positively related to success ($b = 0.51, p < 0.05$), meaning that NETs with this resource were 1.7 times more likely to

achieve the first sale.

Overall, resource heterogeneity had a positive coefficient that was statistically significant. However, when resources were studied separately, only three out of the six resource measures were found to be statistically significant: two tangible resources (physical resources and access to financial assistance) and one intangible (introduction to other people).

Table 6.7 The effect of Resources on NETs' first sale using Logistic Regression

First Sale	Model C	
	Z-score (*SE*)	**O.R.**
Controls		
Team Size	-2.54* (0.159)	0.668
Trading[1]	-1.40 (0.333)	0.628
Service[1]	-0.43 (0.291)	0.882
Opportunity[2]	-0.87 (0.250)	0.805
Necessity[2]	-3.02** (0.330)	0.369
Mean work hours (ln)	5.52*** (0.082)	1.572
Independent variables		
Resources		
Introductions to other people[3] (=1)	**2.41* (0.306)**	**2.095**
Information or advice to help with the business[3] (=1)	0.07 (0.878)	1.064
Training in business-related tasks or skills[3] (=1)	0.49 (0.253)	1.132
Access to financial assistance[3] (=1)	**2.06* (0.246)**	**1.659**
Physical resources[3] (=1)	**2.66** (0.276)**	**2.080**
Business services[3] (=1)	-0.34 (0.266)	0.913
_const	-1.79† (0.997)	0.168
Team Observations	455	
Pseudo R	0.1722	
LR Chi2 (df)	98.33*** (12)	

Significance levels: †>.10; *>.05; **>.01; ***>.001.

[1] The reference category represents manufacturing

[2] The reference category represents those entrepreneurs which motivation to start a business come from both, the business decision and business idea.

[3] Whether the resource is present in the NET (1=yes; 0=no)

6.3.1.4 Familiarity

Familiarity is measured in terms of physical proximity. This means the explanatory variable in the regression analysis compares teams composed of copreneurs with teams that are formed by family, friends and colleagues and tests what of the two types of NETs make a significant contribution to the achievement of first sale. In Table 6.8, Model 10 reported that familiarity has a negative effect on the prospects of making the first sale ($b = -0.35, n.s.$), meaning that the odds of achieving first sale were 29.6% lower for NETs categorised as 'others', compared to those labelled as copreneurs. However, this result was not statistically significant.

Table 6.8 The effect of Familiarity on NETs' first sale using Logistic Regression

	Model 10	
First Sale	**Z-score (*SE*)**	**O.R.**
Controls		
Team Size	-0.74 (0.173)	0.877
Trading[1]	-1.72† (0.319)	0.578
Service[1]	-0.75 (0.277)	0.813
Opportunity[2]	-0.83 (0.239)	0.820
Necessity[2]	-2.83** (0.322)	0.402
Mean work hours (ln)	7.25*** (0.075)	1.721
Independent variables		
Familiarity (=1)	-1.41 (0.249)	0.704
_const	-2.20* (0.561)	0.293
Team Observations	468	
Pseudo R2	0.1401	
LR Chi2 (df)	82.02*** (7)	

Significance levels: †>.10; *>.05; **>.01; ***>.001.
[1] The reference category represents manufacturing
[2] The reference category represents those entrepreneurs which motivation to start a business come from both, the business decision and business idea. Familiarity (=1) refers to Others

Like Models 1 to 9, Model 10 also reports two control variables that are statistically significant. The mean work hours spent in the nascent effort positively impacts the achievement of first sale($b = 0.54, p < 0.001$), and necessity entrepreneurs control was found to be negatively related to achieving success ($b = -0.91, p < 0.01$). Overall, Model 10 revealed that member familiarity was not making a statistically significant influence

in achieving first sale. However, Model 1 to 10 indicate that two controls are significant: mean work hours and necessity entrepreneurs.

6.3.2 NET: The relationship between team composition and the time to achieve first sale

This section studies whether NET composition has any effect on the time taken to achieve the first sale. To do this, the sample was filtered to select the cases that achieved the first sale and the dependent variable was calculated measuring the time elapsed from the moment they started to think about the business to the time the first sale was made. The variable was log-transformed to normalise the distribution. Prior to conducting the analysis, all assumptions that correspond to multiple linear regression analysis were tested. The VIF scores were well below the accepted multicollinearity level. Each model was tested for heteroscedasticity and all showed a constant variance with the variables normally distributed. The residuals from all models were also normally distributed, confirming that linear regression assumptions were not violated.

6.3.2.1 Demographic Diversity

In Table 6.9, the results from four multiple linear regression models are presented. The models together study whether demographic diversity has an effect on the time taken to achieve first sale. Overall, the models do not explain more than 8% of the variance, as the maximum valued reported is equal to $R^2 = 0.0734$, meaning that Model 1a to Model 4a are less fitting models for statistical comparisons.

Variables in Model 1a, for instance, explain only 6.32% of the variance in the time taken to achieve first sale: $R^2 = 0.0632, F(7,311) = 2.92, p < 0.01$. Gender demographics had a positive effect ($b = 2.22, \beta < 0.10, n.s.$), meaning that gender-heterogeneous teams took longer to achieve first sale compared to gender-homogeneous teams; however, this result was not significant. Likewise, ethnicity when studied individually (Model 3a) shows a non-significant and weak effect. According to this coefficient ($b = 0.17, \beta = 0.05, n.s.$), ethnically heterogeneous NETs take longer time to achieve its first sale. Model 2a shows that age diversity reduces the time taken to achieve the first sale ($b = -0.02, \beta = -0.02, n.s.$). This result is not significant either.

Model 4a includes the three demographics: gender, age and ethnicity simultaneously. The effect from each variable when studied individually remains conforming non-significant results. Therefore, it can be concluded that either homogeneous or heterogeneous team compositions in terms of their demographic diversity do not have a significant effect on the time taken to achieve the first sale.

Models 1a to 4a demonstrate that the average time spent on the business by the team members increases the time taken to achieve the first sale. Model 4a ($R^2 = 0.0734, F(9,273) = 2.32, p < 0.05$) supports this by reporting a significant positive coefficient ($b = 0.12, \beta = 0.14, p < 0.05$). Likewise, opportunity entrepreneurs increase the time taken to achieve the same outcome. This is supported in all four models, reporting in Model 4a a significant and positive coefficient ($b = 0.48, \beta = 0.18, p < 0.01$)

Table 6.9 The effect of Demographic Diversity on the time taken to achieve the First Sale using Multiple Linear Regression

	Model 1a			Model 2a			Model 3a			Model 4a		
Time to make first sale (ln months)	**t-value (*SE*)**	**(β)**	**Robust SE**	**t-value (*SE*)**	**(β)**	**Robust SE**	**t-value (*SE*)**	**(β)**	**Robust SE**	**t-value (*SE*)**	**(β)**	**Robust SE**
Controls												
Team Size	-0.63	-0.036	0.090	-0.54	-0.033	0.097	-0.35	-0.020	0.090	-0.33	-0.021	0.100
	(0.116)			(0.124)			(0.120)			(0.127)		
Trading[1]	-1.88†	-0.123	0.233†	-1.44	-0.100	0.245	-1.76†	-0.119	0.238	-1.46	-0.104	0.242
	(0.220)			(0.231)			(0.220)			(0.231)		
Service[1]	0.7	0.046	0.184	0.89	0.062	0.200	0.45	0.030	0.187	0.73	0.052	0.199
	(0.179)			(0.192)			(0.181)			(0.194)		
Opportunity[2]	2.19*	0.128	0.163*	2.83**	0.174	0.173**	2.30*	0.137	0.165*	2.80**	0.176	0.173**
	(0.163)			(0.171)			(0.164)			(0.173)		
Necessity[2]	1.2	0.070	0.267	1.48	0.092	0.277	0.74	0.044	0.265	1.26	0.079	0.288
	(0.251)			(0.270)			(0.258)			(0.275)		
Mean work hours (ln)	2.44*	0.137	0.051*	2.09*	0.123	0.054*	2.41*	0.138	0.052*	2.25*	0.135	0.056*
	(0.049)			(0.052)			(0.051)			(0.053)		
Independent variables												
Gender (=1)	1.34	0.075	0.170							1.07	0.063	0.175
	(0.167)									(0.178)		
Age diversity (ln)				-0.24	-0.015	0.090				0.14	0.009	0.090
				(0.084)						(0.086)		
Ethnicity (=1)							0.81	0.0446	0.217	0.61	0.037	0.231
							(0.209)			(0.220)		
_const	3.79***		0.416***	3.32***		0.471***	3.93***		0.394***	2.83**		0.496**
	(0.432)			(0.504)			(0.428)			(0.524)		
Obs.	311		311	282		282	299		299	273		273
R-squared	0.0632		0.0632	0.0674		0.0674	0.0589		0.0589	0.0734		0.0734
Adjusted R-squared	0.0416			0.0435			0.0362			0.0417		
F (df)	2.92**(7)		2.71**	2.83**(7)		2.80**(7)	2.60*(7)		2.49*(7)	2.32*(9)		2.21*(9)

Significance levels: †>.10; *>.05; **>.01; ***>.001

[1] The reference category represents manufacturing

[2] The reference category represents those entrepreneurs which motivation to start a business come from both, the business decision and business idea.

Gender (=1) refers to heterogeneous teams.

Ethnicity (=1) refers to ethnically heterogeneous teams.

6.3.2.2 Human Capital

Similar to what is done in the logistic regression, each of the HC measures (i.e. education, industry experience and start-up experience) are analysed separately (Models 5a to Model 7a) and together (Model 8a). Model 5a to 8a in Table 6.10 displays the multiple linear regression results. All four models are statistically significant at p<0.05. However, their R^2 values remain quite low. For instance, Model 6a explains 5.73% variance while Model 7a explains 6.87% variance in the time taken to achieve first sale using HC predictors. These models therefore have limited predictive power when it comes to explain the effects of explanatory variables on the dependent variable.

Model 5a shows that the relationship between education and the time to make the first sale is positive ($b = 0.06, \beta = 0.02, n.s.$). This suggests that heterogeneous educated teams take longer time to make the first sale compared to homogeneous educated teams to make the first sale. Model 6a reports that industry experience is positively related to time to first sale ($b = 0.03, \beta = 0.01, n.s.$). As previously, this result is not statistically significant, and the effect is almost non-existent. Start-up experience, studied in Model 7a, further supports that the HC effect on the time taken to achieve first sale is not statistically significant even though it reports a positive relationship ($b = 0.10, \beta = 0.04, n.s.$).

Contrary to what one may expect, the mean work hours invested by team members increases the wait time to achieve the first tangible output of the team effort. Model 8a shows a significant positive relationship between time invested and time taken to make first sale ($b = 0.14, \beta = 0.16, p < 0.01$). Yet, the effect is weak ($\beta < 0.30$).

The positive effect of NETs with heterogeneous compositions of HC on time to make the first sale suggests that homogeneous compositions are preferable to reduce the time taken to achieve the first sale. Nonetheless, the values of the HC variables in the four models are not significant.

Table 6.10 The effect of Human Capital on the time taken to achieve the First Sale using Multiple Linear Regression

	Model 5a			Model 6a			Model 7a			Model 8a		
Time to make first sale (ln months)	**t-value (*SE*)**	**(β)**	**Robust SE**	**t-value (*SE*)**	**(β)**	**Robust SE**	**t-value (*SE*)**	**(β)**	**Robust SE**	**t-value (*SE*)**	**(β)**	**Robust SE**
Controls												
Team Size	-0.91	-0.053	0.095	-0.69	-0.039	0.091	-0.76	-0.045	0.098	-0.88	-0.053	0.103
	(0.123)			(0.118)			(0.124)			(0.131)		
Trading[1]	-1.49	-0.100	0.240	-1.74†	-0.116	0.236	-1.64	-0.109	0.238	-1.32	-0.090	0.241
	(0.225)			(0.223)			(0.222)			(0.227)		
Service[1]	0.81	0.054	0.190	0.72	0.048	0.187	0.96	0.065	0.189	1.04	0.072	0.192
	(0.183)			(0.181)			(0.183)			(0.187)		
Opportunity[2]	2.17*	0.129	0.165*	2.24*	0.132	0.165*	2.47*	0.147	0.166*	2.38*	0.143	0.167*
	(0.165)			(0.164)			(0.166)			(0.168)		
Necessity[2]	1.11	0.066	0.273	1.17	0.069	0.271	0.89	0.053	0.271	0.76	0.046	0.287
	(0.258)			(0.256)			(0.258)			(0.268)		
Mean work hours (ln)	2.49*	0.142	0.052*	2.32*	0.131	0.052*	2.69**	0.154	0.052**	2.79**	0.162	0.053**
	(0.050)			(0.050)			(0.051)			(0.051)		
Independent variables												
Education (=1)	0.39	0.023	0.159							0.13	0.008	0.162
	(0.160)									(0.164)		
Industry (=1)				0.21	0.012	0.154				0.23	0.014	0.158
Experience				(0.154)						(0.159)		
Start-up Experience							0.60	0.035	0.163	0.37	0.022	0.165
(=1)							(0.159)			(0.161)		
_const	4.22***		0.395***	4.18***		0.411***	3.83***		0.395***	3.55***		0.431***
	(0.426)			(0.433)			(0.431)			(0.457)		
Obs.	304		304	308		308	300		300	293		293
R-squared	0.0571		0.0571	0.0573		0.0573	0.0687		0.0687	0.0667		0.0667
Adjusted R-squared	0.0348			0.0353			0.0464			0.0370		
F	2.56*(7)		2.55*(7)	2.61*(7)		2.52*(7)	3.08**(7)		3.01**(7)	2.25*(9)		2.24*(9)

Significance levels: †>.10; *>.05; **>.01; ***>.001.

[1] The reference category represents manufacturing

[2] The reference category represents those entrepreneurs which motivation to start a business come from both, the business decision and business idea.

The three HC variables (=1) refer to heterogeneous teams

6.3.2.3 Resource Heterogeneity

Table 6.11 presents the results of resource heterogeneity as a compositional predictor. This model explains 6.55% of the variance in the time taken to achieve success [$R^2 = 0.0655, F(7, 302) = 2.94, p < 0.01$)]. The model is not strong, as it reports $R^2 < 0.10$. Nevertheless, the purpose of this model is to measure if the resource heterogeneity levels have an effect on the time taken to achieve the first sale. According to the results obtained from the multiple linear regression, resource heterogeneity had a non-significant and negative relation to time ($b = -0.01, \beta = -0.01, n.s.$). This indicates that resource heterogeneity reduces the time taken to achieve first sale.

Table 6.11 The effect of Resource Heterogeneity on the time taken to achieve the First Sale using Multiple Linear Regression

	Model 9a		
Time to make first sale (ln months)	**t-value (*SE*)**	**(β)**	**Robust SE**
Controls			
Team Size	-0.77	-0.045	0.092
	(0.118)		
Trading[1]	-1.82†	-0.121	0.239†
	(0.222)		
Service[1]	0.61	0.040	0.186
	(0.180)		
Opportunity[2]	2.46*	0.146	0.162*
	(0.163)		
Necessity[2]	1.07	0.063	0.283
	(0.258)		
Mean work hours (ln)	2.63**	0.153	0.052*
	(0.051)		
Independent variables			
Resource Heterogeneity	-0.17	-0.010	0.066
	(0.065)		
_const	3.99***		0.441***
	(0.455)		
Obs.	302		302
R-squared	0.0655		0.0655
Adjusted R-squared	0.0432		
F	2.94**(7)		2.87**(7)

Significance levels: †>.10; *>.05; **>.01; ***>.001.

[1] The reference category represents manufacturing

[2] The reference category represents those entrepreneurs which motivation to start a business come from both, the business decision and business idea.

In line with the results from the linear regression models (1a-8a), the mean work hours in the nascent effort shows a positive significant effect on time to make the first sale ($b = 0.13, \beta = 0.15, p < 0.01$). Likewise, opportunity entrepreneurs, was positively related to time ($b = 0.40, \beta = -0.15, p < 0.05$), which indicates that entrepreneurs motivated only by an idea do not seem to benefit to reduce the time taken to make the

first sale.

6.3.2.4 Familiarity

The fourth compositional construct studied is familiarity, the results of which are presented in Model 10a (see Table 6.12). The model reports that familiarity is negatively related to time ($b = -0.16, \beta = -0.06, n.s.$). This negative coefficient indicates that 'others' type of team (coded as 1) reduced the time taken to achieve success compared to NETs formed by romantic couples. However, this is not a significant result and the effect size is weak ($\beta < 0.10$).

This model also reports that the mean work hours spent in the nascent business is a factor that increases the time taken to achieve success. Model 10a reports a positive significant coefficient ($b = 0.12, \beta = 0.14, p < 0.05$). In line with the findings from the previous multiple linear regression models, a second control variable – opportunity entrepreneurs – was found to be statistically significant. This control was positively related to time ($b = 0.37, \beta = 0.13, p < 0.05$). Thus, opportunity entrepreneurs increases the time taken to make first sale.

All the multiple regression models are weak representations of the time to make the first sale. In general, the NETs in which composition is diverse in terms of demographics and human capital were more likely to take longer time to achieve first sale in comparison to teams with homogeneous compositions. In contrast, teams with high levels of resource heterogeneity reduced the time to make the same, and teams formed by family, friends, and colleagues were more likely to achieve first sale earlier than copreneurial teams. However, none of the effects from compositional constructs are statistically significant. Models 1a to 10a shared similar effects from control variables: first, the average number of hours members work on the team efforts increases the time taken to make the first sale; and second, those teams formed by entrepreneurs motivated by the business idea (opportunity entrepreneurs) worked longer time before they see the sale of their first products/services.

Table 6.12 The effect of Familiarity on the time taken to achieve the First Sale using Multiple Linear Regression

	Model 10a		
Time to make first sale (ln months)	**t-value (*SE*)**	**(β)**	**Robust SE**
Controls			
Team Size	-0.13 (0.131)	-0.008	0.110
Trading[1]	-1.88† (0.221)	-0.123	0.235†
Service[1]	0.71 (0.179)	0.047	0.185
Opportunity[2]	2.24* (0.163)	0.131	0.163*
Necessity[2]	1.21 (0.251)	0.071	0.267
Mean work hours (ln)	2.43* (0.050)	0.137	0.051*
Independent variables			
Familiarity	-0.91 (0.173)	-0.058	0.182
_const	4.12*** (0.421)		0.393***
Obs.	311		311
R-squared	0.0603		0.0603
Adjusted R-squared	0.0386		
F	2.78**(7)		2.72**(7)

Significance levels: †>.10; *>.05; **>.01; ***>.001.
[1] The reference category represents manufacturing
[2] The reference category represents those entrepreneurs which motivation to start a business come from both, the business decision and business idea.
Familiarity (=1) refers to Others

6.3.3 Profitability as a measure of success

This section discusses the results obtained when using profitability as a measure of success. This outcome can be measured either as profitability type I (the monthly revenue exceeds monthly expenses) or II (the monthly revenue also covers the owner's salaries). To do this, logistic regression was used to measure the impact of NET composition on achievement of these outcomes, and multiple linear regression was used to measure the impact of NET composition on the time taken to achieve the relevant outcome. All the assumptions that correspond to these two techniques were first tested and confirmed.[19]

6.3.3.1 Profitability type I

The results of the logistic regression using profitability type I as the outcome are reported in Appendix 33 to 35. Models 11 to 14 present the results when studying demographic

[19] The VIF scores can be found in Appendix 39 and 43.

diversity as a compositional predictor, and Models 15 to 18 illustrate the relationship between NET composition studied by HC measures and outcome. Resource heterogeneity and familiarity were included in Models 19 and 20 respectively, to study their effect on the achievement of profitability type I. None of these 10 models were statistically significant, meaning that the models are not a good representation of the study of NET composition and its effect on success.

All the compositional variables except education report negative coefficients. This means that six out of the eight variables support that heterogeneous team compositions are negatively related to nascent entrepreneurial success when measured by profitability type I. Likewise, NETs categorised as 'others' are less likely to succeed compared to copreneurs, but these findings are also not statistically significant.

The linear regression models were used to investigate if NET composition had any effect on the time taken to achieve profitability type I. Appendix 40 to 42 report the results from the analyses. Overall, the models are statistically significant at least at $p < 0.1$.

Of the four constructs, only demographic diversity when studied by ethnic demographics reported a significant result. Model 13a shows that ethnicity was related positively to profitability type I ($b = 0.38, p < 0.10$), which means that the time taken to achieve this outcome was longer for ethnically heterogeneous NETs compared to ethnically homogeneous NETs. However, when other variables from the same construct are added to the model (gender and age), it is no longer statistically significant (see Model 14a in Appendix 40).

NET diversity in terms of age, industry experience and resource heterogeneity reduced the time taken to achieve profitability type I, and 'others' type teams reduced the time compared to copreneurial teams. In contrast, heterogeneous compositions in terms of gender, education and start-up experience seemed to prolong the time to succeed. However, none of these seven variables were statistically significant.

From Models 11a to 20a, two controls were consistently significant. The average time invested by the NET members extend the time to achieve this outcome. The second control identified as significant was opportunity. This also reported a weak ($\beta < 0.2$) but

still positive significant effect, meaning that opportunity entrepreneurs take more time to make revenues that would cover the business expenses.

6.3.3.2 Profitability type II

The results of the logistic regression performed by using profitability type II as a measure of success are presented in Appendix 36 to 38. Unlike profitability type I, profitability type II reports two significant findings. First, Model 22 in Appendix 36 presents the results when analysing age demographics. The model was statistically significant at $p < 0.01$, and shows that age was statistically significant at $(b = 0.50, p < 0.01)$, meaning that NETs with higher diversity in terms of age were 65.1% more likely to achieve Profitability Type II compared to age-homogeneous teams. This effect remains significant when the other two demographic variables are included in Model 24. In this case, age diversity reported a positive and statistically significant coefficient $(b = 0.51, p < 0.01)$ with an odds ratio of 1.666.

Model 30 presents the second significant finding (see Appendix 38). The overall model was statistically significant at $p < 0.05$. It also reports that familiarity has a positive coefficient $(b = 0.90, p < 0.01)$, meaning that NETs formed by family, friends and colleagues were more likely to achieve profitability type II compared to copreneurs. According to the odds ratio, 'others' teams are 2.5 times more likely to achieve profitability type II compared to copreneurs.

Model 21 to 30 shows that when the nascent business develops in the trading industry, it seems to be less likely to achieve profitability type II compared to those in the manufacturing industry. This is significant when gender, ethnicity, human capital, resources or familiarity are included in the models. However, when the model includes age, this effect is no longer significant.

Multiple linear regression results representing the time to make the profitability type II milestone offers a different explanation to that of the logistic models. In relation to the full models, Models 21a to 30a (see Appendix 44 to 46) are statistically significant. The models related to the demographic diversity construct are presented in Appendix 44. Gender and age, when studied separately, showed a negative non-significant effect, meaning that diversity in terms of these two variables reduced the time taken to achieve

profitability type II compared to homogeneous compositions. In contrast, ethnicity showed a positive non-significant effect, suggesting that ethnically heterogeneous teams extend the time taken to achieve the third milestone.

The three human capital measures returned a positive effect when studied separately (see Appendix 45, Models 25a to 27a) or included in the same model (see Appendix 45, Model 28a). NETs with heterogeneous compositions in terms of education, industry experience, or start-up experience extended the time taken to achieve profitability type II compared to homogeneous compositions. Model 29a shows that, the higher the level of resource heterogeneity, the less time needed to achieve this outcome ($b = 0.10, \beta = -0.13, n.s.$). Nonetheless, this finding was also not statistically significant. Model 30a includes familiarity as the compositional predictor variable. It presents a positive, weak, and nonsignificant effect ($b = 0.14, \beta = 0.07, n.s.$).

The type of industry appeared as significant in each of the models regardless of which compositional construct was observed. NET efforts in the trading industry achieved profitability type II in less time than those in the manufacturing industry. This effect was consistently significant at $p < 0.05$ and $\beta > 0.20$.

Like the results from the other two outcomes, the average time spent in the business by the members seems to increase the time taken to achieve success instead of reducing it. This result is observed in Models 21a to 30a, with a significant level of $p < 0.05$ in most of the cases.

6.4 Two clusters and NE success.

The analysis in Section 6.3 captured the individual effect of each compositional construct, but is not enough to answer the third research question revisited in this chapter, '*what effect does NET composition have on nascent entrepreneurial success?*' Therefore, this section explores the effect of team typology or configuration in relation to achieving various success indicators.

This section follows the same structure as the previous section. The difference is that the predictor variable to study team composition effects takes a configurational approach rather than the individual compositional constructs studied earlier in this chapter. First,

it was analysed whether there was any difference between NET configurations (Cluster 1 and Cluster 2) and the achievement of the three outcomes (first sale, profitability type I, and profitability type II). Thereafter, a t-test was performed to measure if there was any difference in the time taken to achieve these outcomes between the two clusters. Lastly, logistic regression was performed to study which of the two clusters revealed earlier from the cluster analysis, has a higher probability to achieve the three milestones within the five-year time period of the PSED II study.

The results in Table 6.13 suggest that the teams from the two clusters (membership from cluster 1 and cluster 2) have very different success profiles, when success is measured in terms of whether or not the venture achieved the first sale [$X^2\ (1, N = 417) = 4.66, p <$ .05.] The results indicate that 67.2% of the NETs achieved first sales; 47.1% of those from Cluster 1 and the remaining 52.9% from Cluster 2. Thus, membership in Cluster 2 was more likely to achieve the first outcome. However, Clusters 1 and 2 do not show any significant difference in achieving profitability type I $[X^2\ (1, N = 280) = 0.11, n.s.]$.

Table 6.13 Cross tabulations and Pearson Chi2 between success and Cluster 1 and 2.

	Cluster 1	Cluster 2					
First Sale	**%**	**%**	**Total (%)**	**Chi-Square**	**Obs.**	**df**	**Cramer's V**
Yes	47.14	52.86	67.15	4.6594*	417	1	0.1057
No	58.39	41.61	32.85				
Total Cluster	50.84	49.16	100.0				
Profitability Type I[1]	**%**	**%**	**Total (%)**	**Chi-Square**	**Obs.**	**df**	**Cramer's V**
Yes	47.85	52.15	66.43	0.1110	280	1	-0.0199
No	45.74	54.26	33.57				
Total Cluster	47.14	52.86	100.0				
Profitability Type II[2]	**%**	**%**	**Total (%)**	**Chi-Square**	**Obs.**	**df**	**Cramer's V**
Yes	56.07	43.93	57.53	6.8303**	186	1	-0.1916
No	36.71	63.29	42.47				
Total Cluster	47.85	52.15	100.0				

df= degrees of freedom
Significance levels: †<.10; *<.05; **<.01; ***<.001.
[1] The monthly revenue exceeds monthly expenses.
2 The monthly revenue covers the monthly expenses and the owner's salaries.

Even though Cluster 2 faces a brighter scenario when analysed the team membership in relation to the first sale as an outcome, it was not the case when the nascent business is studied in relation to it achieving the Profitability Type II milestone. In this case, Cluster

1 was more likely to achieve the third outcome. According to the results presented in Table 6.13, of the 57.5% of NETs that achieved profitability type II milestone, 56.1% were from Cluster 1 and the remaining 43.9% from Cluster 2. This difference is statistically different at $X^2\ (1, N = 186) = 6.83, p < .01$.

The results in Table 6.13 indicate that NETs configuration does make a difference when achieving first sale or profitability type II. However, neither Cluster 1 nor 2 seem to report any significant result from the t-test. (See Table 6.14). These results suggest that there is no significant difference in the time taken to achieve these outcomes between the two clusters.

Table 6.14 Differences in NET mean time to achieve success (t-test)

	Groups	T-test for equality of Means				
		n	$\bar{X}$ (exponential value)	SD	t-test	*p-value*
First Sale	*Cluster 1*	128	2.47	1.32	0.0930	0.9260
	Cluster 2	145	2.45	1.42		
Profitability Type I[1]	*Cluster 1*	87	2.87	1.12	-0.0794	0.9368
	Cluster 2	91	2.88	1.30		
Profitability Type II[2]	*Cluster 1*	42	3.38	0.89	0.0010	0.9992
	Cluster 2	38	3.38	1.06		

Significance levels using a two-tailed t-test: †<.10; *<.05; **<.01; ***<.001

[1] The monthly revenue exceeds monthly expenses.

2 The monthly revenue covers the monthly expenses and the owner's salaries

To further study the effect of profiles on nascent entrepreneurial success, logistic regression was performed. Unlike the previous result shown in Table 6.13, the logistic regression aims to identify which of the two clusters has a higher probability to achieve the three milestones. Table 6.15 shows that Model 41 is statistically significant at $p < 0.001$. The model showed that the cluster predictor had a positive and significant coefficient $(b = 0.71, p < 0.10)$. The results indicate that teams in Cluster 1 are 1.68 times more likely to achieve the three milestones compared to teams in Cluster 2. Model 41 also reports two control variables that are statistically significant. Team size negatively impacts the achievement of the three milestones $(b = -0.64, p < 0.05)$. This suggest that businesses with smaller NETs are more likely to achieve first sale, profitability type I, and profitability type II. NETs starting a business in the trading

industry are 62.9% less likely to achieve the three milestones compared to those NETs who are starting their business in the manufacturing industry.

Table 6.15 The effect of NET configurations on Nascent Entrepreneurial Success using Logistic Regression

The Three Milestones	Model 41	
	Z-score (*SE*)	**O.R.**
Controls		
Team Size	-2.42*	0.574
	(0.289)	
Trading[1]	-2.54*	0.371
	(0.484)	
Service[1]	0.10	1.028
	(0.373)	
Opportunity[2]	1.08	1.316
	(0.336)	
Necessity[2]	-1.35	0.538
	(0.581)	
Mean work hours (ln)	3.60	1.305
	(0.101)	
Independent variables		
Cluster (=1)	1.95†	1.684
	(0.366)	
_const	-0.50	0.223
	(0.920)	
Team Observations	394	
Pseudo R	0.0858	
LR Chi2 (df)	38.46***(7)	

Significance levels: †<.10; *<.05; **<.01; ***<.001
Cluster (=1) refers to Cluster 1
[1] The reference category represents manufacturing
[2] The reference category represents those entrepreneurs which motivation to start a business come from both, the business decision and business idea.

6.5 Summary of findings

This chapter explored the relationship between the compositional constructs and their effect on success. A series of longitudinal and multiple linear regression analyses were performed using three different dimensions to measure success. The results are summarised in Table 6.16:

Table 6.16 Logistic regression results.

Construct		First Sale	Model Fit LR Chi2	Profitability Type I[1]	Model Fit LR Chi2	Profitability Type II[2]	Model Fit LR Chi2
Demographic Diversity	*Gender (=1)*	$(+, p < .10)^a$	84.97***	$(-, n.s.)^a$	9.38	$(-, n.s.)^a$	11.62
		$(+, n.s.)^b$	64.42***	$(-, n.s.)^b$	10.46	$(-, n.s.)^b$	22.13**
	Age	$(+, n.s.)^a$	69.23***	$(-, n.s.)^a$	9.16	$(+, p < 0.01)^a$	21.14**
		$(+, n.s.)^b$	64.42***	$(-, n.s.)^b$	10.46	$(+, p < 0.01)^b$	22.13**
	Ethnicity (=1)	$(-, p < 0.10)^a$	71.78***	$(-, n.s.)^a$	9.76	$(+, n.s.)^a$	11.66
		$(-, n.s.)^b$	64.42***	$(-, n.s.)^b$	10.46	$(+, n.s.)^b$	22.13**
Human Capital	*Education (=1)*	$(-, p < 0.05)^a$	87.47***	$(+, n.s.)^a$	9.31	$(+, n.s.)^a$	13.52†
		$(-, p < 0.01)^b$	81.35***	$(+, n.s.)^b$	10.94	$(+, n.s.)^b$	14.21
	Industry Experience (=1)	$(+, n.s.)^a$	72.58***	$(-, n.s.)^a$	*9.37*	$(-, n.s.)^a$	*10.39*
		$(+, n.s.)^b$	81.35***	$(-, n.s.)^b$	*10.94*	$(-, n.s.)^b$	*14.21*
	Start-up experience (=1)	$(+, n.s.)^a$	*77.05****	$(-, n.s.)^a$	11.34	$(+, n.s.)^a$	11.26
		$(+, n.s.)^b$	81.35***	$(-, n.s.)^b$	10.94	$(+, n.s.)^b$	14.21
Resources	*Resource Heterogeneity*	$(+, p < .001)^a$	91.32***	$(-, n.s.)^a$	10.56	$(-, n.s.)^a$	9.04
Familiarity	*Familiarity/ proximity (=1)*	$(-, n.s.)^a$	82.02***	$(-, n.s.)^a$	9.57	$(+, p < 0.01)^a$	17.64*

Significance levels: †<.10; *<.05; **<.01; ***<.001
Gender (=1) refers to heterogeneous teams.
Ethnicity (=1) refers to ethnically heterogeneous teams.
The three HC variables (=1) refer to heterogeneous teams
Familiarity (=1) refers to more distantly related
a When measured individually
[b] When the model included all the variables from the same compositional construct
[1] Monthly revenue exceeds monthly expenses
[2] Monthly revenue not only exceeds monthly expenses but also includes the owners' salaries

According to these findings, the effect of the NET composition on success varies. Gender, ethnicity, education and resource heterogeneity are the predictors that reported a significant effect on the probability of achieving the first sale. However, none of the compositional constructs were shown to have a significant effect on profitability type I. Profitability type II reported some significant predictors, but these predictors are different to those that are predicted when the dependent variable was considered as the dichotomy between making the first sale or not. Even though the compositional construct seems to have some effect on whether or not the NETs achieve its key milestones, the predictors seem not to have a significant effect on the time taken to achieve any of the three outcomes.

This chapter also explored the effect of composition from a typological perspective. The key focus of interest is if NET composition measured in terms of configurational profile of teams has an effect on the probability of achieving key milestones. The Pearson Chi-Square revealed that there is a significant difference in whether or not they achieve each outcome; however, a t-test showed that composition does not play a significant role in

the time taken. Finally, logistic regression reported that teams in Cluster 1 are 1.7 times more likely to achieve the three outcomes compared to teams in Cluster 2.

Chapter 7. Discussion of the Findings

7.1 Introduction

This chapter reflects on the results presented in Chapters 5 and 6, and links them with the current nascent entrepreneurship and team literature. The overarching purpose is to investigate NET compositions to identify what types are prevalent, and what profiles can be distinguished. In addition, the chapter considers the effect of NET composition on nascent entrepreneurial success.

The research questions addressed in this research are:

1. *What types of composition are prevalent in NETs?*
    a. *What compositional dynamics can be observed in the NET over time?*
    b. *How do the different compositional constructs used in this study (i.e. demographic diversity, human capital, resource heterogeneity and familiarity) relate to, or influence, each other?*
2. *What different team profiles or types can be identified among NETs based, on their compositional dimensions?*
3. *What effect does NET composition have on nascent entrepreneurial success?*

7.2 NET composition

The composition of teams has been widely studied in the top management team and group formation literature (Chandler *et al.*, 2005). However, entrepreneurial teams have not been studied in great depth (Klotz *et al.*, 2014), and even less when investigating teams formed at the nascent stage of the business life cycle (Ruef *et al.*, 2009; Steffens *et al.*, 2012).

Various theories exist that help to explain why individuals are attracted to starting a business with people who possess a certain profile, and these theories can be grouped into two categories. Theories in the first category suggest that teams should consist of similar individuals, whereas the second suggests that team members should be diverse. Some of the theories supporting the first category are: the social psychological model (Aldrich and Kim, 2007); the similarity-attraction paradigm (Byrne, 1971; Horwitz, 2005;

Vogel *et al.*, 2014); and the homophily theory (McPherson *et al.*, 2001). Such theories state that individuals join together to start a team based on attraction and similar characteristics among the members. Hence, they support the idea that teams are formed on a best-fit basis. The second category of theories builds on the rational process model (Aldrich and Kim, 2007) and cognitive resource perspective (Byrne, 1971; Horwitz, 2005; Vogel *et al.*, 2014). In contrast to the theories in the first category, these theories suggest that individuals are more interested in acquiring and sharing skills, knowledge and experience that is varied and diverse. Hence, in the second category, teams are formed in consideration of the individuals' instrumental qualities.

The findings of this study suggest that, of the eight variables used to analyse NET composition, six (age, ethnicity, education, industry experience, start-up experience, and familiarity) can be explained by homophily principles. The theories supporting homophily tendencies, such as the similarity-attraction paradigm, argue that individuals who share the same or similar characteristics identify with one another more easily, and so feel more comfortable when interacting (Byrne, 1971).

The evidence presented in this research suggests that age-homogeneous compositions are more prevalent. This is in line with Steffens et al.'s (2012) previous findings when studying SwPSED. The authors found that age-homogeneous teams are expected to be more common in the nascent entrepreneurial context as individuals of a similar age are more prone to share similar interests. This indicates that membership is encouraged by short intergeneration differences – that is, team members are of similar age (Coad and Timmermans, 2014). According to Horwitz (2005), being similar in age means that team members share similar goals and possess similar mind-sets. Therefore, age-homogeneous team formation is more common as individuals of the same age share a common language due to their similar experiences, increasing their interaction and likelihood to start a business (Zenger and Lawrence, 1989). In such cases, individuals may be avoiding to start a business with those with dissimilar age as the intergeneration differences can lead them to managerial styles difficult to conciliate. For instance, young age entrepreneurs might be more adventurous, whereas the older ones might be more cautious (Horwitz, 2005).

The lower rate of participation of older people in this study may also diminish the

probability of having a large intergeneration difference which could also explain the predominance of age-homogeneous teams. Older people' participation in the entrepreneurial activity was investigated by Hatak *et al.* (2015), who argue that older people are more reluctant to invest time in a project that may pay back only over the long term. However, this conclusion may hold only for those entrepreneurs trying to establish a business in a developed country such as US or Australia (Hatak *et al.*, 2015). According to Verheul and van Stel (2007), developed countries benefit from the creativity and dynamism of younger entrepreneurs, while less developed countries need the broader experience that only older entrepreneurs' have. Hence, the intergeneration differences and the low rate of entrepreneurial participation among older entrepreneurs, diminishes the presence of age-heterogeneous teams.

According to Pelled *et al.* (1999), teams formed by the same age or by the same ethnicity provides a sense of belonging and identification between the members as they share traditions and habits. The evidence in this thesis suggests that ethnically homogeneous compositions are more common in NETs. This strong tendency observed in over 80% of the cases is explained by homophily principles. Even though minorities are increasing in the US (Bernstein and Edwards, 2008), which lead to more diverse teams (Nathan and Lee, 2013), the results in this thesis indicate that US nascent entrepreneurs try to form a team with others with whom they share the same language, background, and culture. The low rate of ethnically heterogeneous teams could be possibly explained by the low participation rate of minorities (~20%) in nascent entrepreneurial activities. This contradicts Nathan and Lee (2013) previous investigation of London businesses, as they found that 53% of the teams had at least one migrant owner, arguing therefore that migrant status or minorities is positively related to entrepreneurial participation. However, the authors acknowledge that the study took place at the time when policy-diversity was major in London. The results in this thesis are in line with Gompers *et al.* (2017) recent study of MBA students founding microbusinesses in the US. They observed that ethnic homophily tendencies are strong in Asian and white Americans, but not among African and Hispanic Americans. They further concluded that 'this could be due to the high cost of searching among small groups or as a result of strategic decision making by underrepresented minorities' (Gompers *et al.*, 2017, p.11). Therefore, it could be argued that the contradiction between this and previous studies (Hoogendoorn and Van

Praag, 2012; Nathan and Lee, 2013) is mainly because of the US source of the data in this study.

Team composition has also been examined through human capital indicators in this thesis. This construct is important as it is hard to find within one single individual all the knowledge, skills, abilities and other characteristics[20] that the nascent effort needs to establish a business (Thiess *et al.*, 2016). Certainly, the study of human capital from a macro-level perspective (i.e. teams) has been observed not only by its diversity measures but also by its aggregated measures. According to Wright and McMahan (2011), the aggregated approach is a 'more is better' approach, while diversity captures a more synergistic effect given that the team's variability or similarity surpasses the simple aggregation of individuals. This thesis considers the latter (diversity), and studies human capital through three indicators found to be significant predictors of entrepreneurial efforts and its outcomes: education, industry experience and start-up experience.

Overall, the results suggest a prevalence of teams formed by people with similar levels of education and experience. This indicates that homophily principles guide individuals with varying levels of HC when they form teams to explore venture creation opportunities with those who have the same level of knowledge or experience. The first measure – education- supports homogeneous team compositions. As has been suggested, team members are more comfortable working with colleagues of same/similar level of knowledge (Zenger and Lawrence, 1989; McPherson *et al.*, 2001). Previous findings indicate that homophily in education increases the probability of 'matching' and forming a team, as individuals have the same degree of knowledge (Gompers *et al.*, 2017). Likewise, individuals with same level of education in the NET is not unusual since it is very likely that the members would have met each other while studying (Ensley and Hmieleski, 2005). The predominance of an education-homogeneous NET can also be explained by the level of education of each member in the team; a majority of the nascent entrepreneurs in this study have a medium level of education (technical or vocational degree, some college, community college or bachelor's degree). This supports Jayawarna *et al.* (2014a) findings from a study that looked at the effects of human capital on entrepreneurship in the UK context. The authors explained that high-level degree holders

[20] Summarised as KSAO's characteristics [see Ployhart and Moliterno (2011)]

may perceive themselves to be charted towards success in an established organisation, and so they are less likely to look for an entrepreneurial career (Jayawarna *et al.*, 2014a). In contrast, individuals exposed to entrepreneurial education (during their undergraduate degree) develop a positive attitude to the idea of starting a business (Packham *et al.*, 2010).

Homophily principles seem to hold valid not only for education, but also for experience. The findings suggest that team members are more likely to be in a team where their entrepreneurial colleagues share similar level of industry experience and experience in starting a new business. This is in line with Steffens *et al.* (2012) previous findings from a study conducted using SwPSED data, the Swedish version of PSED. The authors found that homogeneous compositions prevailed most of the time when observing start-up experience, as individuals do not perceive diversity in this area as important (Steffens 2012). Gompers *et al.* (2017) argue that similarity in industry experience 'can also be a source of homophily because it provides common basis for socialization and friendship' (p.15).

HC-homogeneous compositions prevail in NETs regardless of the context, Sweden or the US; when studied using indicators of education, industry experience, and start-up experience. This suggests that nascent team formation is explained by homophily or similarity attraction principles (Byrne, 1971; McPherson *et al.*, 2001). These theoretical stances broadly state that individuals form a team with similar people, i.e. people with the same **k**nowledge base, **s**kill profile, **a**bilities and **o**ther characteristics (KSAO's). In such teams, the level of team cohesiveness increases as all team members have the potential to offer an equal contribution to the start-up efforts. This equal contribution often results in less frustration, more collegiality and focused efforts by all concerned (Kim and Aldrich, 2006; Steffens *et al.*, 2012).

In terms of familiarity, the results showed that NETs are formed by individuals who knows each other and with whom they feel comfortable working with. 'Copreneurs' teams are slightly more common than 'others', but both compositions are explained by homophily principles since previous research have found that friends (Francis and Sandberg, 2000; D'hont *et al.*, 2016) and ex-colleagues (Hinds *et al.*, 2000) form part of strong relationships similar to that of filial ones (Kim and Aldrich, 2006; D'hont *et al.*,

2016). This is further supported by Brannon *et al.* (2013) who state that relationships that are built on friendship or on previous work relationships should not be underestimated as these types of relationships are essential for 'binding' a group. After all, "people who associate with one another, under certain conditions, become more likely to continue the association subsequently in other circumstances" (Aldrich and Kim, 2007, p.13). Thus, the relevance of member familiarity for nascent entrepreneurial teams can better be explained by homophily principles rather than instrumental approaches as people linked by either a filial, friend or colleague ties are more likely to team-up and start a business (Bird, 1989).

The decision to distinguish copreneurs from the rest of the sample in this study, however, is supported by the findings of previous studies (Ruef *et al.*, 2003; Steffens *et al.*, 2012; Brannon *et al.*, 2013). Brannon *et al.* (2013), for instance, argue that the over-representation of copreneurial teams in PSED I is noticeable, and not considering them as an exclusive category could mislead the findings. Thus, they studied copreneurs or what they referred to as 'romantic couples' first as a distinct category of an entrepreneurial team and second in comparison to teams that are made out of members who are biologically linked. However, Brannon *et al.* (2013) in their paper highlighted the limitation of the simplistic treatment of the types of relationships in their analysis. Ruef *et al.* (2003) and Steffens *et al.* (2012) further supports Brannon et al.'s (2013) conclusions and explained that romantic couples should be treated separately as their team dynamics are different given their extreme proximity and constant interaction in and outside the entrepreneurial effort.

Even though some aspects of team formation in terms of demographic diversity, human capital, and familiarity are explained by homophily tendencies, others (such as gender and resources) are more instrumentally driven. In such a case, the team is mainly formed by members who make their decision to join the team based on the complementarity perspective. The analysis shows that gender-heterogeneous NETs are more prevalent in teams that are in their nascent stage of development. This result was not surprising given the high participation of copreneurs (spouses and partners living together) that undertake the entrepreneurial activity. From this, Brannon *et al.* (2013) and Steffens *et al.* (2012) concluded that the presence of romantic couples (which in this case are

predominant in this study) somehow shadows the presence of teams formed by members of the same gender.

In regards to gender-homogeneous teams, the thesis found that teams formed by *only females* or *female dominated* are less than 10% in this study, which shows the unequal participation of females and males in the entrepreneurial activity. There are at least three potential explanations linked to these results. First, the social construct (stereotypes) around gender and entrepreneurship has affected the female entrepreneurial intention and participation (Gupta *et al.*, 2009), reinforcing the male ones (Santos *et al.*, 2016). Second, women have shown to have a risk averse nature, so they are more reluctant to perform activities with a high degree of uncertainty such as starting a business (Caliendo *et al.*, 2015). Thirdly the women self-perception in regard to the entrepreneurial activity. This means that, while men perceive this activity as feasible, women do not see it as a career option (Santos *et al.*, 2016).

Overall, gender-homogeneous teams formed only by females is quite low. However, female participation in a team-based entrepreneurial effort increases when they are part of a copreneurial effort (Steffens *et al.*, 2012) This indicates that the micro social environment, in this case the husband or the partner, remarkably favours female participation in the entrepreneurial activity possibly due to their support, advice and legitimacy. (Ruef *et al.*, 2003; Brannon *et al.*, 2013; Santos *et al.*, 2016).

As for resources, the findings suggest that team members are strongly instrumentally driven, as team members seem to prefer to start a new venture with others that can provide resources they lack. This is in line with previous research which investigates how starting a business as a team instead of a solo-effort increases the chances of success due to the ability to gain access to key resources that are otherwise not possible for a single person (Forbes *et al.*, 2006; Cantner and Stützer, 2010). Cantner and Stützer (2010), studying German new venture teams, concluded that team entrepreneurial effort increases the possibility of accessing a broader array of resources as each team member comes to the start-up effort with a number of contacts – their social network – willing to help the new business. Forbes *et al.* (2006) argue that, from the social capital perspective, team formation is influenced by the member's ability to access to valuable resources such as funding. Thus, an individual selected into a team depends upon the amount and type

of resources these individual members bring to the nascent business.

The importance of resources to the success of start-up businesses has been widely discussed in the literature (Penrose, 1959; Barney, 1991; Alvarez and Busenitz, 2001; Forbes *et al.*, 2006). Of the more recent research, variability in the overall resource base has been highlighted as the determining factor of success at the nascent stage as resource diversity is important to overcome uncertainties often faced by nascent entrepreneurs at start (Grossman *et al.*, 2012). The evidence presented in this thesis suggests that such variability is highly appreciated and often promoted when forming a NET. Team members with different resources tend to collaborate as they perceive each other as essential or necessary to succeed in the entrepreneurial activity (Kamm and Nurick, 1993).

The descriptive exploratory research also revealed that homogeneous or copreneurial teams outweigh heterogeneous or 'others' teams and this over-representation is relatively stable throughout the six waves of the PSED II. The results in this thesis show that NETs resist to change their composition, which indicates that teams at the nascent stage place more importance on the benefits of homogeneous and strongly related individuals such as trust, best-fit and good communication (McPherson *et al.*, 2001). These findings agree with the few studies performed to understand how team membership changes over time (Ucbasaran *et al.*, 2003; Kim and Aldrich, 2006; Hellerstedt and Aldrich, 2008). Kim and Aldrich (2006) in their research using PSED I, found that teams can undergo changes due to members joining and leaving the team, however, the team tends to add members to fill the gap of the leaving member. Ucbasaran *et al.* (2003) studied this in the UK and found that the member exits are less likely to happen in the presence of filial relationships as they wish to protect their interests and to avoid instability caused by membership changes that can damage the well-being of the team.

Unlike previous investigations (Chandler and Lyon, 2001; Horwitz, 2005; Amason *et al.*, 2006; Hellerstedt and Aldrich, 2008; Sonderegger, 2010; Steffens *et al.*, 2012; Coad and Timmermans, 2014), the research presented in the thesis goes beyond studying compositional variables in isolation and their composition stability to explore compositional constructs in combination to explain if there are any relationships

between constructs or if one construct influences the nature of team characterised by another construct. This means that the team' heterogeneous or homogeneous composition in one construct can be influenced by another construct; for example, gender-heterogeneity teams and the teams formed by copreneurs.

Unfortunately, only a few combinations were highlighted as significant. To begin, this study has found that five compositional variables are associated with familiarity. This means that copreneurs and 'others' NETs show different patterns of homogeneous as opposed to heterogeneous compositions in terms of gender, age, education, start-up experience, and resource heterogeneity (see section 5.4). Copreneurial teams, for instance, are more likely to be gender-heterogeneous, education-homogeneous, start-up experience-homogeneous and possess diverse resources. This pattern indicates that the presence of copreneurs favours female participation in the entrepreneurial activity given the affective relationship (Steffens *et al.*, 2012; Brannon *et al.*, 2013). These copreneurs are also highly driven by homophily principles in terms of HC (McPherson *et al.*, 2001) as suggested by their preference to be with others who possess similar knowledge (Gompers *et al.*, 2017) and experience (Steffens *et al.*, 2012). Even though previous literature suggest that teams composed by members with similar characteristics could pose a risk to less resource variability (Forbes *et al.*, 2006; Muñoz-Bullon *et al.*, 2015), the entrepreneurial couple seem to have access to different types of resources for the wellbeing of the business (Forbes *et al.*, 2006; Grossman *et al.*, 2012). In contrast, 'Others' type of teams are more likely to be gender-homogeneous, education-heterogeneous, start-up experience-heterogeneous and diverse in resources. This suggests that the 'others' type of teams benefits heterogeneous compositions as individuals are more open to having members with different levels of knowledge and experience (Vogel *et al.*, 2014), which leads to more diverse resources thanks to a more sporadic network (Muñoz-Bullon *et al.*, 2015).

Overall, the analysis conducted using two compositional dimensions at a time (two or three) revealed significant overlaps and potential inter-connections between dimensions. These patterns were consistent when two or three dimensions were simultaneously considered in the analysis. These inter-relationships suggest that there are teams with mixed membership characteristics, so NET composition needs to be

studied taking multiple perspectives in regards to compositional dimensions in its entirety rather than considering one or two dimensions at a time. By adopting a multi-dimensional or typological approach, this thesis identified two profiles (Clusters 1 and 2) of NET when the four compositional constructs are treated concurrently: demographic diversity (gender, age, and ethnicity), human capital (education, industry experience, and start-up experience), resource heterogeneity, and familiarity. Membership in Cluster 1, a configuration formed by 'others', is mainly explained by complementarity and instrumental criteria (Aldrich and Kim, 2007; Vogel *et al.*, 2014) around age, start-up experience and education. Yet, their gender-homogeneous composition is more effectively explained by the similarity attraction paradigm (Byrne, 1971). Cluster 2 is composed of romantic couples. Given the type of relationship, Cluster 2 is heterogeneous in terms of gender, which is in line with previous arguments regarding gender heterogeneity presence due to romantic couples (Ruef *et al.*, 2003; Brannon *et al.*, 2013). NETs in this cluster are mainly formed based on homophily principles as they and their romantic partner have the similar age, start-up experience and education level (Williams and O'Reilly III, 1998; McPherson *et al.*, 2001).

Previous scholars have argued that if the members are closely related, the resources provided by the members could be redundant (Grossman *et al.*, 2012; Muñoz-Bullon *et al.*, 2015). However, the results of this study suggest that NETs are considerably diverse in terms of their resources, regardless of their compositional profile. Members in cluster 2 are largely populated by romantic couples, and Cluster 1 by individuals who are reasonably intimate; family, friends, and colleagues. Both groups reported a resource heterogeneity average value of over four (on a scale of 0 to 6). This indicates that the majority of the teams in this sample (irrespective of which cluster they belong to) possess resources that are diverse. Thus, although NETs are largely explained by homophily principles in regard to familiarity (Hinds *et al.*, 2000; Kim and Aldrich, 2006; D'hont *et al.*, 2016), they seem to be aware that the nascent business necessitates a variety of resources at its disposal to facilitate the start-up process (Forbes *et al.*, 2006; Grossman *et al.*, 2012).

The analysis also captures striking differences with regard to the NET resources when individual resource components are considered. The results indicate that of the six types

of resources studied[21] , the distribution of only one type of resource – *access to financial assistance* –is significantly different between the two clusters. This could possibly be explained by two reasons. First, membership in cluster 1 holds heterogeneous compositions both in terms of education and start-up experience, two human capital predictors found to be positively associated with team members' willingness to invest in a new venture (Vogel *et al.*, 2014). Secondly, team formation on Cluster 1 is mainly explained by cognitive resource perspective or the rational process model, which means that entrepreneurs attach more importance to instrumental reasons to join with others to start a team (Aldrich and Kim, 2007). Therefore, team members on this cluster are more interested in ensuring access to financial resources through at least one member.

Overall, the team composition for those in cluster 1 is mainly diverse whereas in cluster 2 is mainly homogeneous. According to team literature, teams with a heterogeneous composition have been linked to team conflict (Williams and O'Reilly III, 1998). However, NET membership in Cluster 1 accounts for a certain degree of loyalty and trust environment, given their closeness in terms of familiarity and their gender-homogeneous composition (Williams and O'Reilly III, 1998; Hinds *et al.*, 2000), which could potentially soften the team's discrepancies. Team composition in Cluster 2 can mainly be explained by homophily principles, which means that the team members have a preference to work with others who are similar to them (McPherson *et al.*, 2001). This homogeneous tendency in terms of thinking, attraction and loyalty have been found to provoke an automatically trusting environment, thereby reducing the level of stress and anxiety (Hellerstedt *et al.*, 2007; Foo, 2011).

Previous studies have constructed typologies of entrepreneurs. To do so, some have focused on solo-entrepreneurs (Korunka *et al.*, 2003), while others have focused their attention on family entrepreneurial teams (Westhead and Howorth, 2007). However, only one effort to my knowledge has developed a typology based on entrepreneurial teams (Harper, 2008). As discussed in Chapter 2, Harper (2008) studied dyadic entrepreneurial teams and identified five types of entrepreneurs based on the teams' structure and function. Unlike Harper, this research has not limited its findings to dyadic

[21] Introductions to other people; information or advice; training in business-related skills; access to financial assistance; physical resources; and business services.

efforts and has not taken a profit-seeking problem-solving view to define entrepreneurship. Instead, it is motivated to understand why people join together to start a team, whether their team member selection is done on best-fit basis (Williams and O'Reilly III, 1998; McPherson *et al.*, 2001) or on the basis of convenience (Freeland and Keister, 2016; Thiess *et al.*, 2016). By doing so, it provides a typology of NETs based on their composition studied through diversity and proximity relationship criteria. Such typology adds to the current understanding of NET formation from a holistic perspective rather than from a simplistic one-dimensional criterion often found in entrepreneurship research.

7.3 The relationship between NET composition and success

Chapters 3 and 6 outlined the challenges of measuring success in ventures at the early stage of development, which we referred to as nascent ventures. The need to study multiple success indicators (Amason *et al.*, 2006) and consider indicators that measure realistic achievements by nascent ventures (Schoonhoven *et al.*, 2009) has been highlighted in the relevant literature. This thesis studied the compositional dimensions in relation to venture success by using three success indicators as dependent variables to better understand and answer the third research question:

What effect does NET composition have on nascent entrepreneurial success?

The discussion that follows is presented under three sub-headings. The content of each section discusses how the composition of NETs affects nascent entrepreneurial team success following the success indicators: first sale, profitability type I, and profitability type II.

7.3.1 The first milestone: nascent venture achieving its first sale

Three of the four compositional constructs studied – demographic diversity, human capital, and resource heterogeneity – reported significant influence to a nascent entrepreneurial team making its first sale. According to the results, NETs with high levels of gender and resource diversity have higher tendency to achieve their first milestone, making the first sale, compared to gender- and resource-homogeneous teams (47.2% and 40.5% respectively). The likelihood of achieving first sale by a gender-heterogeneous

teams when compared to gender homogenous teams supports Godwin *et al.* (2006) and Brannon *et al.* (2013) explanation of how mixed-gender teams are more likely to succeed. Brannon et al (2013), for instance, argued that gender-heterogeneous teams when formed by couples are likely to transfer their household roles to the start-up business which seems to promote work-personal life balance and to contribute to entrepreneurial success. Nonetheless, when looking at the data distribution on gender diversity in more detail, it is clear that, of the homogeneous NETs, those with full female representation have a lower probability of achieving first sale; 66.5% less likely than gender-heterogeneous teams. This might be because, even in modern days, women's entrepreneurial activity is affected by the social constructs (Gupta *et al.*, 2009). Following the arguments of gender stereotypes, Godwin *et al.* (2006) concluded that "men are believed to be more persistent, risk taking, confident, and knowledgeable about business than women" (p.628). Therefore, female entrepreneurs still face disadvantages, including difficulty in gaining trust from venture capital investors and receiving limited support from their social circle (Gupta *et al.*, 2009; Vogel *et al.*, 2014). In addition, women are regularly perceived as individuals that follow softer managerial strategies than men (Ching-Yin Yim and Harris Bond, 2002) and pursue opportunities for convenience rather than gaining pecuniary benefits (Jayawarna *et al.*, 2013), thus it is possible to assume that for female dominant teams achieving first sale might not be a priority.

Godwin *et al.* (2006) suggested that women teaming-up with male partners are more likely to overcome the entrepreneurial hurdles that come with their gender such as discrimination when seeking for resources. This arrangement is appealing as it offers access to diverse networks that could offer more opportunities to access diverse resources necessary to perform the entrepreneurial activity (Godwin *et al.*, 2006). A second possible explanation for women-homogeneous NETs underperforming is the time women could devote to their business activities; female entrepreneurs are presumed to spend less time in the business, probably due to their household roles (Verheul *et al.*, 2006). This seems a valid proposition to make since the results showed that the average time team members spent on their business is positively and significantly related to entrepreneurial success. The relationship between female nascent entrepreneurial effort and the time spent in the business needs further investigation to offer a conclusive explanation.

With regard to members bringing resources to the team, the analysis has shown that NETs with diverse resources are more likely to achieve first sale compared to NETs that have lower resource heterogeneity. This is in line with previous research that investigates the effect of resources on new venture outcomes (Cooper *et al.*, 1994; Batjargal, 2000; Samuelsson and Davidsson, 2009; Grossman *et al.*, 2012; Muñoz-Bullon *et al.*, 2015). Cooper *et al.* (1994) for example, found that the availability of resources is a significant contributor to achieve new venture survival, and Muñoz-Bullon *et al.* (2015) concluded that "the greater the heterogeneity of the resources comprising a nascent entrepreneur's start-up team, the more likely it is that the venture will successfully establish itself in the market" (p.98). Likewise, Batjargal (2000), studying Russian NETs concluded that the resource dimension of social capital positively affects entrepreneurial performance (sales growth, profit margin and return on assets). Samuelsson and Davidsson (2009) conducted a study of nascent entrepreneurs using the Swedish PSED and found that the resources gathered through their members (instrumental social capital) positively influence the creation process for innovative and imitative ventures. Thus, the results in this thesis and previous research suggest that resource heterogeneity when starting a business is highly valuable to NETs irrespective of the location in which the venture is formed and running its operation from. Two possible explanations can be offered in relation to this finding. First, initial resources put the nascent effort in a better position to deal with what Cooper *et al.* (1994) called "environmental shocks and [allow them to] weather bad decisions" (p.373), and second, NETs are in a better position to embody different resources that help to not only deal with uncertainty but also create new opportunities (Alvarez and Busenitz, 2001).

Moreover, the analysis adds to Muñoz-Bullon *et al.* (2015) findings of a positive impact of resource heterogeneity on entrepreneurial success. The data from this research extend this explanation by offering an explanation in relation to what resource types are key to this positive relationship. The findings in general suggests that while resource heterogeneity is an important determinant of new venture success, ownership of some resources has a stronger effect than others. Three of the six types of resources significantly increase the odds of achieving first sale: *introductions to other people* (odds ratio=2.1), *access to financial assistance* (odds ratio=1.7), and *physical* resources (odds ratio=2.1). First, a NET that has members who are connected to wider networks and are

in a stronger position to *introduce other people* to the team (a proxy measure for social capital) is at least two times more likely to achieve the first sale compared to a team that do not have the luxury of receiving the benefits of introduction through members' social connections. This could also indicate that a nascent business could receive benefits from having a team member in a position to introduce other people and tap into their human capital thus increasing the overall human capital base available for the team to get knowledge/information benefits. There is a general consensus that people outside the NET (e.g. advisors or partners) can help the business with their knowledge, experience or strategic thinking (Cooper *et al.*, 1994). This resource thus increases the odds of success since the team at some point can get into 'learning traps', needing fresher insights that give new or different solutions to business problems (Zahra *et al.*, 2006; Cantner and Stützer, 2010).

Second, a NET with access to *financial assistance* is 1.7 times more likely to achieve first sale compared to a team that does not have this resource. Previous research has highlighted the importance of financial capital in the entrepreneurial endeavour (Cooper *et al.*, 1994; Van Gelderen *et al.*, 2006). Van Gelderen *et al.* (2001), studying 330 nascent entrepreneurs in the Netherlands, found that getting adequate finance for the start-up is the main reason for entrepreneurs to hanging onto the idea even though the entrepreneur was less successful in achieving tangible outputs. Van Gelderen *et al.* (2001) explained that the lack of financial resource discourages the entrepreneur and at the same time increases the rates of entrepreneur abandoning the entrepreneurial effort. This is not surprising as financial capital, according to Cooper *et al.* (1994), "can create a buffer against random shocks and allow the pursuit of more capital-intensive strategies, which are better protected from imitation" (p.371).

NETs with financial capital also have the added advantage of laying the foundation for a favourable landscape given that its flexibility helps the nascent business to acquire other key resources (Brush *et al.*, 2001). The use of this resource enables the NET to buy time to overcome potential problems at the start-up stage which often results in entrepreneurs giving up on their hopes even before making a start to the business (Cooper *et al.*, 1994). This is quite valuable since, as Aldrich and Martinez (2001) argued, financial resource could cover the operational expenses necessary at a period where the

nascent business is not generating enough income to survive.

A NET with '*physical resources*' is also twice more likely to achieve first sale compared to a team that lacks valuable physical resources. Brush *et al.* (2001) explained that physical resources are 'utilitarian resources' that are directly related to the productive process (p.67). Thus, the advantage a team with adequate level of physical resource over a NET that does not possess physical resources could be related to the lack of legitimacy as the latter without a physical place to establish the business may not be able to compete with those using the space to make an impression and establish a direct relationships with their customer base (Brush *et al.*, 2001). Indeed, virtual entrepreneurial efforts overcome this issue by building up their reputation (Brush 2001). However, the start-up still requires a place to locate the business, even if this means a home-based business that uses family facilities (Greene and Brown, 1997; Aldrich and Martinez, 2001). Physical resources in some cases are necessary to create an advantage over large competitors which, in the nascent entrepreneurship scenario, is important to create enough market presence (Brown and Butler, 1995).

The findings in this thesis regarding the specific resources that significantly affect nascent entrepreneurial success are in line with previous findings. However, the evidence presented in this thesis partially contradicts Lichtenstein and Brush (2001) findings. Lichtenstein and Brush (2001) presents results from one of the few research efforts tried to identify specific resources that are salient in nascent entrepreneurial efforts. The authors concluded that while financial and physical capital are not so important for a business to progress, 'soft' resources such as knowledge and expertise are key ingredients in the successful formula for a venture. The context in which the research was conducted could offer a potential explanation for contradictory findings. While this research focusses on NETs, Lichtenstein and Brush (2001) research studied solo efforts. Likewise, the industry context in the PSED sample (manufacturing, trading and services) would influence the role of financial and physical capital requirements for nascent efforts whereas the high technology setting for the sample selected in Lichtenstein and Brush (2001) study does not capture the requirements of the financial and physical capital at the start-up stage.

The positive effect of diversity in gender and resource heterogeneity is in line with the

cognitive resource perspective or rational process model, according to which high levels of diversity benefit the NET outcomes because each member of the team adds different resources, perspectives and experiences (Foo *et al.*, 2005; Vogel *et al.*, 2014). However, the results showed that demographic diversity does not always have a positive effect, as ethnically heterogeneous teams are less likely to achieve success compared to ethnically homogeneous ones. From the ethnically homogeneous NETs, white-homogeneous are the ones with higher probability of succeeding than heterogeneous teams. Nathan and Lee (2013) have explained that ethnically diverse teams are more likely to face disadvantages such as discrimination from customers, face difficulties making decisions in allocating resources, lack necessary communication skills to approach customer and supplier bases and low levels of trust between these team members and outside parties involved. There are advantages for ethnically heterogeneous teams from their high level of innovation potential and creative abilities (Alesina and La Ferrara, 2005; Hoogendoorn and Van Praag, 2012), however, NETs in relation to achieving their first sale, homogeneous compositions offer them advantages over heterogeneous compositions.

This study is one of the few studies that offer a causal explanation for the relationship between the compositional' influence of ethnic diversity in NETs and venture achieving its first milestone. The few studies conducted so far have focused on laboratory studies (Hoogendoorn and Van Praag, 2012) and used samples from large established organisations (Kochan *et al.*, 2003; Nathan and Lee, 2013). Hoogendoorn and Van Praag (2012), for example, studied 550 students who were in the process of developing 50 companies in the Netherlands. They concluded that performance is positively influenced by ethnically heterogeneous teams given that these teams possess diverse knowledge and background which enables mutual learning. Kochan *et al.* (2003) studied two information-processing firms, a financial services firm and a retail company, and concluded that ethnic diversity had no positive or negative effect after controlling for the effect of the industry in which these firms cater for. Nathan and Lee (2013) studied 7,600 firms in London to investigate the relationship between cultural diversity, innovation, entrepreneurship and sales strategies. The authors concluded that ethnically diverse teams are more likely to innovate and reach international markets in comparison to homogeneous teams.

Even though previous studies have unveiled and exposed the positive aspects of ethnically diverse teams, this study shows that in the US, new ventures benefit from an ethnically homogeneous composition. This concurs with Gompers *et al.* (2017) who found that "ethnic homogeneity reduces the likelihood for bad outcomes" (p.24). These ethnically homogeneous teams are more promising in the early stages given that team members are likely to have what Watson *et al.* (2002) called, team- rather than self-oriented behaviours. This means that team members in a homogeneous team organise tasks and share the same goals instead of trying to dominate each other as often happens in heterogeneous teams (Watson *et al.*, 2002). Nonetheless, ethnically heterogeneous compositions are beneficial for the NET in later stages of the start-up process. The findings of this thesis suggest that when the nascent business is relatively more 'mature' (i.e. trying to achieve profitability type II), the odds of success for ethnic-heterogeneous teams are higher than those of ethnically homogeneous teams. This evolution is expected as ethnically diverse teams in more mature or established businesses take advantage of the pool of knowledge, skills and perspectives from its diverse composition (Kochan *et al.*, 2003; Hoogendoorn and Van Praag, 2012).

Like the ethnicity demographic variable, HC comes in the form of similar educational qualifications from team membership that showed significant results. Watson *et al.* (2003) explained that education "provides the knowledge base and analytical and problem-solving skills to more effectively deal with the demands of entrepreneurship" (p.148). This thesis, when studying the relationship between education diversity and entrepreneurial success, revealed that education-homogeneous teams have better odds of achieving a first sale compared to education-heterogeneous teams. This finding agrees with those of Amason *et al.* (2006) and Coad and Timmermans (2014) regarding the effect of educational diversity on sales. Amason *et al.* (2006) conducted a study of 174 new ventures that offered initial public offerings (IPOs) and found that education heterogeneity decreased sales growth. They observed that ventures pursuing high levels of novelty are not improved by an education-heterogeneous composition. Rather, "highly novel ventures with more homogeneous TMTs may perform better because more homogeneous teams will find high levels of behavioural integration easier to achieve" (Amason *et al.*, 2006, p.142). Furthermore, Coad and Timmermans (2014) found that many (but not all) Danish dyadic entrepreneurial teams, when they have the same level

of education, are more likely to contribute to venture survival as team members are less prone to conflict and communicate better.

The results in this thesis -teams with the same level of education outperforming those that are diverse educated- juxtapose with others (Foo *et al.*, 2005; Timmermans, 2009; Shrivastava and Tamvada, 2011). Timmermans (2009), conducting a study on new start-ups in technology and knowledge-intensive industries in Denmark, concluded that educational diversity has no significant effect on firm survival. The authors further found that educational diversity has a positive effect in the first year of the start-up, but the effect disappears over time. Shrivastava and Tamvada (2011) conducted a study on established small businesses teams in the US, and found that educational diversity positively influences firm growth. Foo *et al.* (2005) argue that educational diversity does help with external evaluation, which facilitates funding sources that contribute to the start-up effort's success.

There are two potential explanations for this contradictory evidence. First, NET composition's effect on success varies given the industry context in which the research was conducted (Foo *et al.*, 2005; Timmermans, 2009). This indicates that education-heterogeneous compositions benefit entrepreneurial efforts in high-technology industries as these types of businesses requires different types and levels of knowledge to develop specialised products, while education-homogeneous compositions benefits start-ups with a low-technology profile. Second, entrepreneurial team composition affects a nascent effort and an operating business differently as they have different needs and challenges to deal with (Foo *et al.*, 2005; Shrivastava and Tamvada, 2011). Thus, this indicates that, at least for nascent entrepreneurial efforts in the US, educationally homogeneous teams provide favourable conditions to achieve a first sale than teams formed by individuals that possess diverse educational backgrounds. This conclusion is further supported by Amason *et al.* (2006) who used a different US data-set from entrepreneurs involved in start-up efforts and reached to the same conclusions as this thesis. NETs are clearly more likely to succeed when the team members are homogeneously educated. However, the results further revealed that in the educationally homogeneous teams, the membership consisting of individuals with medium level of education are in a better position to support the firm to achieve its first sale when

compared to heterogeneously educated teams. The level of education has been related to different type of skills and knowledge that can be acquired based on the level of achievements. Foo *et al.* (2005) argue that higher levels of education is focused on developing individuals' conceptual skills while lower levels of education prioritise the development of practical skills.

The relationship between the level of education and its effect on entrepreneurial outcome has been widely discussed in the literature (Bosma *et al.*, 2004; Arenius and De Clercq, 2005; Dickson *et al.*, 2008). In agreement with Dickson *et al.*'s (2008) conclusion, the evidence in this thesis suggests that the level of education increases the likelihood of success only for those who studied up to the bachelor's degree in comparison to education-heterogeneous teams. The significant advantage of receiving a medium level of education on entrepreneurial success could be attributable to: a) individuals with such an educational level potentially receive entrepreneurial training through specialised courses or modules (Dickson *et al.*, 2008); b) individuals with a medium level of education (e.g. graduate entrepreneurs) are more likely to access to external resources such as advice and finance (Pickernell *et al.*, 2011) , and c) individuals with medium level education are more likely to recognise entrepreneurial opportunities (Arenius and De Clercq, 2005).

Even though the logistic regression models reported significant predictors for the probability of the NET achieving its first sale, the compositional dimensions studied does not seem to have a significant effect on the time taken to achieve the first sale. The assumption was that the compositional dimensions that affect the prospects of a nascent firm making the first sale are different to those important to make the first sale within a short space of time compared to making the sale after staying in business for long. When testing this assumption, first the complementary analysis that accompanied the compositional dimensions as explanatory predictors in the logistic regression turned out to be poor predictors as a whole. Second, none of the compositional measures studied offered significant coefficients meaning that none of the compositional dimensions could explain the time to make the first sale on its own or in combination. Nonetheless, when observing the direction of the relationships, some interesting observations were made. NETs with heterogeneous compositions in terms of ethnicity and resources, and teams

formed by members with no marriage or other romantic relationships are the only variables that reported a negative coefficient. The finding that ethnically diverse teams reduce the time taken to achieve first sale could be explained by the findings from studies looked into culturally diverse teams. According to the literature, culturally diverse teams display higher rates of creativity and therefore produce more innovative solutions easier to trade than those teams that work on existing products that are difficult and take time to market (Hoogendoorn and Van Praag, 2012; Nathan and Lee, 2013). Moreover, teams formed by people from different cultures may have access to diasporic networks, which could assist the team to access different markets with reduced effort and in limited time (Nathan and Lee, 2013). Resource diverse teams also reduce the time to market their first product/service as they already possess the diverse resource base necessary to develop their business (Muñoz-Bullon *et al.*, 2015). NETs with essential resources for their businesses are in a more favourable position to invest in innovative solutions (Cooper *et al.*, 1994) and perform the start-up process more effectively (Samuelsson and Davidsson, 2009). In addition, NETs formed by family, friends and colleagues may reduce the time taken to achieve first sale because the team members have taken advantage of their strong relationship which "in turn, facilitates communication, and expedites decision making" (D'hont *et al.*, 2016, p.549).

The finding that NETs achieving a first sale in less time when they are formed by either ethnic or resource diverse member base, can be explained by cognitive resource perspective which states that diversity in teams leads to operational synergies making the team more efficient (Williams and O'Reilly III, 1998; Horwitz, 2005; Foo, 2011; Vogel *et al.*, 2014). Regarding familiarity, it seems that reducing the time to achieve first sale is due to their proximity and trust that the team members have, leading to a more effective performance (D'hont *et al.*, 2016, p.549).

As for the rest of the variables (gender, age, education, industry experience, and start-up experience), teams with homogeneous compositions in these aspects are more efficient. This is explained by the homophily principle which states that homogeneous compositions are perceived as stable, and helps them to get financial support necessary to develop the product or service to be traded (Foo, 2011). They are also less prone to conflict, have enhanced communications, and high levels of reported trust making no

hard feelings among members when it takes longer a time for them to put their products or services into the market (McPherson *et al.*, 2001; Aldrich and Kim, 2007; Vogel *et al.*, 2014).

Overall, the evidence, regarding the effect of NET composition on the time taken to achieve a first sale, suggests that homogeneous compositions are more efficient during the earliest stage of the nascent start-up. Therefore, in line with homophily principles and the similarity attraction paradigm, the team is more efficient given the advantages of having similar members including constant interaction (Amason *et al.*, 2006; Nathan and Lee, 2013), team stability (Byrne, 1971), high levels of cohesiveness (Vogel *et al.*, 2014), loyalty (Ruef *et al.*, 2009), and trust (Hellerstedt and Aldrich, 2008).

7.3.2 The second milestone: profitability type I

Unlike the first milestone, the compositional constructs did not offer a strong explanation for making a surplus in revenues that cover the business expenses (profitability type I). Almost all of the coefficients had a negative effect, indicating that homogeneous compositions and copreneur arrangements for teams are more likely to help the nascent business to achieve profitability type I, compared to a heterogeneous team or 'others' team. When comparing the results from the first milestone and the second, it seems that overall team diversity favours the achievement of first sale while teams with similar members are more likely to achieve profitability type I. This indicates that at the start, NETs need diverse properties, but once the team has made the first sale the team needs unity and close collaborations that are promoted through homogenous membership arrangements (Aldrich and Waldinger, 1990; Nathan and Lee, 2013).

The results in the second milestone suggest that homogeneous NETs outperform heterogeneous NETs. There are at least two potential explanations linked to the results. First, the NET, after achieving first sale, needs to be perceived as a stable start-up by stakeholders to fortify their business relationships (Kim and Aldrich, 2006; Vogel *et al.*, 2014). This is more easily achieved when NET composition is homogeneous as members with the same type of skills, knowledge and experience facilitate team coordination, improve social interaction, and make them less prone to conflict (Horwitz, 2005) Second, as suggested by similarity attraction paradigm (Nathan and Lee, 2013) and homophily

principles (McPherson *et al.*, 2001), the NET develops improved communication channels as members with similar backgrounds, interests and levels of resources share the same language and vocabulary thus reducing communication barriers and costs, and increasing team cohesiveness (Wiersema and Bantel, 1992; Williams and O'Reilly III, 1998). Regarding the familiarity aspect, copreneurs still outperform 'others' teams. A possible explanation for this is that copreneurs' knowledge and understanding of each others' abilities and needs help them to be flexible in their role as a team and partner in order to perform a joint act that benefits all parties concerned (Brannon *et al.*, 2013). Due to non-significant associations found, these explanations however needed to be treated with caution.

The results obtained by studying the impact of NET composition on the time taken to achieve the second milestone did not report significant results except for one of the compositional dimensions: ethnicity. Ethnically heterogeneous teams seem to lengthen the time taken to achieve profitability type I compared to ethnically homogeneous teams. This indicates that ethnically diverse NETs not only have fewer possibilities to achieve the second milestone in comparison to homogeneous ones, but also take longer time to reach this milestone. The negative effect of ethnically diverse NETs on making a surplus can be explained by two reasons. First, ethnically heterogeneous teams take a longer time to make profits from their sales as the diverse ethnic backgrounds often results in team conflicts impeding the team from functioning at its optimal levels (Williams and O'Reilly III, 1998). Second, heterogeneous compositions can potentially lead to more creative thinking (Vogel *et al.*, 2014), but the decision-making process takes longer, jeopardising the possibility to take advantage of opportunities (Foo *et al.*, 2005). This is in line with Watson *et al.*'s (2002) research which concluded that diverse teams are oriented towards solving interpersonal differences, while ethnically non-diverse teams are more oriented to the task. Thus, ethnically heterogeneous teams seem to lack focus on the entrepreneurial effort, reducing their chances of achieving success either at first sale or profitability type I. Overall, the evidence also suggests that ethnic diversity significantly constrains the team's effectiveness.

7.3.3 The third milestone: Profitability Type II as success

Profitability type II, the third milestone, measured whether the NET monthly revenue not only exceeds the monthly expenses but also includes the owners' salaries. The results suggest that demographic diversity and familiarity have a significant effect on achieving this milestone. The results showed that age-heterogeneous NETs are more likely to achieve profitability type II compared to less heterogeneous ones, as suggested by cognitive resource perspective, which argue that heterogeneous compositions are linked to positive outcomes as these type of teams are more likely to produce operational synergies (Vogel *et al.*, 2014).

Previous findings have demonstrated that diversity in age increases team effectiveness, as older people offer teams with more mature opinions while younger team members contribute to the team with fresh insights (Tsui *et al.*, 1992; Horwitz, 2005). As a result, age-diverse teams are presumed to bring more information and opinions that enrich the decision making process (Williams and O'Reilly III, 1998). This study shows that NETs in the US benefit from age diverse compositions, just as Kearney *et al.* (2009) found in German teams from established organisations. However, the predominance of age-homogeneous teams in this study suggests there is a tendency to avoid starting an age-heterogeneous team which restricts their probability of reaching a more economically stable status (i.e. profitability type II). Thus, this thesis agrees with Kearney *et al.*'s (2009) recommendations on taking actions that mitigate conflict to enable a fruitful and effective communication in age-diverse compositions.

Teams that are outside the copreneurial arrangements are more likely to achieve the third milestone when compared to copreneurial efforts. This is a significant finding, as NETs formed by family, friends and colleagues are 2.5 times more likely to achieve profitability type II compared with NET formed by husband and wife or partners living together. Even though Brannon *et al.* (2013) argue that copreneurial efforts enjoy flexibility as an advantage which enables them to acknowledge each other's strengths and weaknesses thus working together effectively to achieve their first sale, this advantage doesn't work the same way when teams are trying to move beyond making the first sale to make profits that allow the owner salaries to be paid from the revenues they make through their sales. In addition, it could be argued that when copreneurs work in

partnership, the extra pressure that makes the owners to draw their salaries from the business profits is less when compared to teams where members are expecting to receive payments for the work they put into the business. The finding that copreneurial teams have lower tendency to make profits from the business can also be explained by the practice of re-investments from profits by copreneurs who are interested in long-term benefits over achieving short-term benefits (Brannon *et al.*, 2013). These findings add to D'hont *et al.*'s (2016) conclusions derived from their study of entrepreneurial teams in Paris where they explained the strong relationships between the friends and colleagues and the venture development. They found that teams formed by friends and colleagues benefit the start-up as long as the interaction among members is guided by affection. According to this explanation, the NETs formed by friends and colleagues who prioritise their relationship over the process of founding a business can benefit from the intrinsic advantages to the relationship such as trust (Kim and Aldrich, 2006), communication (Hinds *et al.*, 2000), empathy and sympathy (D'hont *et al.*, 2016) which enables the team to reach profitability type II.

Even though age and familiarity have a significant effect on achieving the third milestone, thus giving the owners the opportunity to make profits from their business, none of the compositional constructs had a significant impact on the time taken to achieve this milestone: the time it takes for the owners to make their first salary from the business. The results of the multiple linear regression models indicate that diversity rather than homogeneity helps NETs to make their first salary within a short space of time from the business start-up. This suggests that, NETs with heterogeneous compositions are more productive, as suggested by rational process models, which argue that NETs are more efficient given the advantages of complementarity (Aldrich and Kim, 2007; D'hont *et al.*, 2016), resource availability (Forbes *et al.*, 2006), contrasting ways of thinking (Vogel *et al.*, 2014), creativity (Alesina and La Ferrara, 2005; Hoogendoorn and Van Praag, 2012), and operational synergies (Wright and McMahan, 2011).

To summarise, the evidence so far suggests that new teams require alternative compositions at different times, depending on the outcome of interest. To achieve the first sale, NETs with a gender-heterogeneous, resource heterogeneous, ethnically homogeneous and education-homogeneous compositions offer favourable conditions.

For profitability type I, none of the compositional constructs showed a significant effect although the coefficients indicate that homogeneous compositions in general benefit the start-up effort when start up success is measured by whether or not they make some profits from their sales. NETs that are age-heterogeneous and whose members are family, friends and colleagues are more likely to achieve profitability type II. As for the time taken to achieve the three success dimensions, the NET compositions studied in this thesis were found to be less effective in making success predictions. Yet, this thesis supports the dual effect of composition diversity in NETs in the US, which agrees with the conclusions of Schjoedt *et al.* (2009): "While the entrepreneurial teams need to be heterogeneous it also needs to be homogeneous in terms of composition for it to function" (p.516).

7.3.4 Further findings/ Supplementary analysis

The composition of NETs studied by the four constructs and its effect on success revealed that some team structures and characteristics are more favourable than others and those favourable conditions vary per outcome measure of success. The results obtained from the analysis also suggest that, in addition to the compositional dimensions, a number of control variables used in the analysis make a significant contribution to explaining various success measures at the NET level. Three particular measures are worth discussing here: a) the mean working hours that team members devote to the business; b) whether NETs are motivated by necessity, opportunity or both; and c) the industry in which the venture operates.

Results explained that to achieve the first sale, NETs not only benefit from gender- and resource-heterogeneous compositions or ethnically and educationally homogeneous structures, but also by the contribution from the team members in terms of their commitment measured by the time they devote to support business activities. This indicates that at the early stages of business development the more time the team members devote to the business, the more likely they obtain a positive outcome in terms of them making the first sale of the business. This has been highlighted by previous authors investigating the effect of working hours on entrepreneurial activity (Alstete, 2008). Ehigie and Umoren (2003) argue that the working hours the entrepreneur is willing to invest can be interpreted as the level of the entrepreneur's commitment to the new venture. The argument is that the more committed the individual entrepreneur to

the business aims or the members of the entrepreneurial teams to the business they jointly owned, the more likely the new venture becomes a reality (Ehigie and Umoren, 2003). This is supported by Alstete (2008) who studied established entrepreneurs and small business owners and stressed that the path towards business foundation and ownership is through hard work, dedication and many long working hours. This indicates that the level of commitment and passion which leads the solo or entrepreneurial team to spend a considerable amount of time into the business, enables them to reach the first milestone. Nonetheless, the entrepreneurial team should pay special attention to the time invested, as this control also reported that the more time invested in the business, the more time it takes to make the first sale and generate profits. This could possibly be explained because entrepreneurs' level of commitment increases the likelihood to success, but if the entrepreneurs spend too much time in the business, the start-up process is hindered as extreme long working hours conduce to high levels of stress and labour churn (Rowley and Purcell, 2001).

The results also suggest that necessity entrepreneurs are less likely to make the first sale compared to those teams which motivations comes from not only the necessity to start the business but also have a clear idea of the type of business they want to start. Capaldo (1997) in a case study of Italian entrepreneurial teams, found that inadequate or lack of clarity in the business idea significantly delay the start-up process. Capaldo (1997) stressed that identifying the entrepreneurial idea is an essential step towards the successful foundation of a new business and future growth. NETs with a clear business idea are in a position to avoid unfruitful actions that lead to waste of time, resources, and possibly motivation (Kickul *et al.*, 2009). However, opportunity entrepreneurs are not necessarily in an advantage position since the results in this thesis have reported a negative (but not significant) coefficient in relation to making the first sale. This suggests that teams who have started a business exclusively motivated by the idea of the business they want to start are at risk of being mere 'dreamers' (Arora *et al.*, 2008). Therefore, the motivation driven by necessity and opportunity would help the business to concrete "the link between the business concept and the market" building the bridge between the start-up business and the customers (Bhave, 1994, p.236).

Finally, the type of industry in which the entrepreneurial team operates also has an effect on nascent entrepreneurial success. Previous studies have used the type of industry as their context (Le Breton-Miller and Miller, 2015) and mostly as an environment control (Foo, 2011; Brannon *et al.*, 2013; Vogel *et al.*, 2014). This is important as, depending on the type of industry, a NET faces different turbulence, entry and exit barriers, and competition (Brannon *et al.*, 2013, p.119). The evidence here suggests that NETs operating in manufacturing industry have a significant advantage over those in a trading industry. This result manifested in the three dimensions of success studied in this thesis. This is partially in line with Cooper *et al.* (1994) previous studies on new solo ventures in US, which concluded that start-up businesses growth is higher in manufacturing sector than retail and personal services. They also explained that, even though trading and personal services encounter lower start-up barriers, they develop in a more competitive market as most of the businesses do not need unique capabilities. This indicates that solo and team efforts in the US benefit at the nascent stage if they start a manufacturing business.

The service industry, compared to manufacturing, did not have a statistically significant effect, yet the coefficients lead to mixed conclusions. To begin with, a new business in the manufacturing industry has better odds of success compared to a business in the service industry, however this holds only for the first success measure, first sale. In contrast, a NET starting a business in the service industry is more likely to succeed over the one on the manufacturing sector when the success measure is profitability type II. This is in line with Steffens *et al.* (2012), who found that, Swedish NETs starting a new business in the service industry are more likely to outperform manufacturing businesses when trying to generate profits. This indicates that a NET founding a service business has better odds of reaching profitable status. However, although the effect is significant in Sweden, it is not in the US.

7.4 NET typology and success

Previous studies have considered diversity when studying teams and its effect on success by conceiving the compositional constructs as separate entities. Indeed, the compositional constructs, when studied separately, revealed what type of composition –

heterogeneous versus homogeneous or copreneurs versus 'others' – was predominant and favourable for team success. This thesis has investigated such individualised effects in the NET context by conducting a series of multivariable analyses. However, to fully address the third research question, a further analysis into the effect of NET profiles on nascent entrepreneurial success is conducted using the cluster profiles to study the cluster membership and success relationship. The analysis followed three steps. First the likelihood of members in each profile achieving each of the three milestones was studied. Second, the two compositional profiles were studied in relation to the time taken to achieve success. Thirdly, the proposition that the more milestones a NET achieves, the more likely it is to be successful in making profits (rather than making the first sale) was tested.

To facilitate the discussions around the compositional differences between the two clusters, Figure **5.9** is re-inserted here:

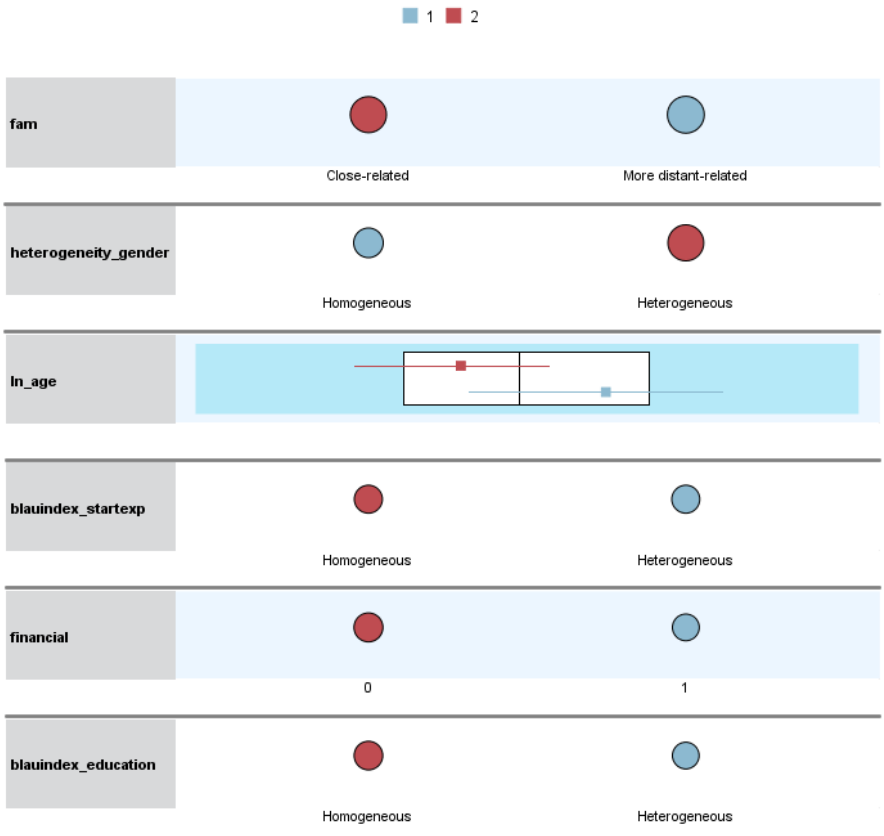


Figure 5.9 Cluster comparison six variables model

According to the findings, the NETs identified as Cluster 2 are more likely to achieve the first milestone. NETs in this cluster are driven by homophily principles with regard to their type of relationship, start-up experience and education face a brighter scenario when attempting to achieve at least the first sale. This suggests that sharing the same levels of knowledge, experience and skills helps to build a harmonious work environment which benefits the start-up effort (Thiess *et al.*, 2016). This environment is enriched by the benefits that gender-heterogeneous teams can offer (Knockaert *et al.*, 2011). Paradoxically, the evidence from studying the team from a profile or type perspective indicates that access to financial resources is no longer as important to achieve first sale, as long as the team profile matches with the membership in Cluster 2. This suggest that homogeneity in terms of age, and start-up experience and heterogeneity in gender are in a better position to compensate for the lack of financial resource. This finding holds true for teams made out of romantic couples.

Conversely, none of the team profiles seems to enjoy an advantage for achieving profitability type I. This means that, regardless of whether the initial NET composition is studied by its individual compositional constructs or by its holistic conception through creating clusters of similar compositions, the team composition has null or minimal effect to achieving the second milestone. However, there is a significant difference between the two configurations in relation to achieving the third milestone. It seems that, while the teams in Cluster 2 are more likely to achieve the first sale, Cluster 1 members are more likely to achieve profitability type II. Teams formed by family, friends and colleagues that are heterogeneous in education and experience tend to be more successful in terms of making profits that helps to cover their salaries. This agrees with the previous findings discussed in section 7.3 regarding the impact of each of these variables to a profitable type of success, which further suggests that, to cover the team members' salaries, NETs benefit from diversity rather than homogeneous compositions (Byrne, 1971; Horwitz, 2005; Aldrich and Kim, 2007; Vogel *et al.*, 2014) and formed by family, friends and colleagues (Hinds *et al.*, 2000; D'hont *et al.*, 2016). Access to financial resources when the NET composition is studied from a more holistic approach perspective does have a significant positive effect when pursuing a more profitable status that allows teams to cover owners' salaries from business revenues. This concurs with previous research that has highlighted the positive and significant effect of financial resources in pursuing more

ambitious aims such as a reasonable profitable business (Cooper *et al.*, 1994). Even though the profiles reported significant differences in regards to whether Cluster 1 or 2 are more likely to achieve success, the profiles studied does not seem to differ significantly in the time taken to achieve each of the success dimensions studied in this thesis.

According to the logistic regression results, when studying what profile is more likely to reach a profitable status that would enable the team to make enough money to cover the salaries from the nascent business, Cluster 1 is 1.7 times more likely to achieve three milestones than Cluster 2. Thus, NETs with more heterogeneous compositions have a better chance to develop the business to a profitable one rather than just making the first sale. This indicates that the team is making progress in the start-up process thanks to their diverse knowledge, thinking and skills, and the availability of financial assistance. This result is in line with cognitive resource diversity (Byrne, 1971; Horwitz, 2005; Vogel *et al.*, 2014) and the rational process model (Chandler *et al.*, 2005), according to which, it is assumed that a heterogeneous context promote positive outcomes as this type of composition enables the co-existence of contrasting ways of thinking, thereby enhancing creativity and complementarity (Aldrich and Kim, 2007; Vogel *et al.*, 2014). At the same time, NETs in Cluster 1 seem also to get this advantage thanks to the trusting environment build by the members who have the same gender facilitating communication and team cohesiveness. This means that heterogeneous behaviours are more likely to happen, but some effects derived from homogeneous compositions might still be present when the team profile matches with the membership in Cluster 1.

Overall, the results in this study suggest that, depending the aim a team is trying to achieve, one profile could be advisable or seem to be ideal to increase the team's odds of success. Cluster 2, which consists of romantic couples who possess the same level of education and experience but lack financial assistance, is the NET profile most likely to make the first sale, but this configuration seems insufficient to achieve a more economically stable nascent effort. In that case, teams in Cluster 1 which are formed by 'other' type of relationships, are more diverse in terms of their education and start-up experience and have financial assistance; are more likely to achieve profitability type II. The holistic conception of NET composition and the findings derived from it add to our

current knowledge regarding the study of teams' diversity and its effect on success (Knockaert *et al.*, 2011; Coad and Timmermans, 2014; Muñoz-Bullon *et al.*, 2015; Thiess *et al.*, 2016). It provides a potential explanation on the current mixed research conclusions on the topic (Klotz *et al.*, 2014), as teams can have either homogeneous and heterogeneous characteristics at the same time, or have positive and negative results depending on the outcome in consideration (Amason *et al.*, 2006; Schoonhoven *et al.*, 2009).

Overall, the findings presented in this thesis have provided answers to the three main research questions: *What types of composition are prevalent in NETs?, What different team profiles or types can be identified among NETs, based on their compositional dimensions?* and *What effect does NET composition have on nascent entrepreneurial success?* In doing so, this research has made three original and innovative contributions. First, it adds to the current knowledge base, concerning team formation and composition, through its exploration of the nascent entrepreneurial context, while at the same time contributing to the existing understanding of the profiles that are best qualified to start a team-based business. In this sense, this thesis shows that individuals have stronger tendencies to form teams with people they feel they identify with, in terms of similarity in age, ethnicity and human capital. Furthermore, the findings highlight that homogeneous compositions, or close types of relationships, do not imply a redundancy of resources, but in fact the opposite, at least in a US nascent entrepreneurial context.

Second, the present findings are innovative and make a significant contribution through proposing a typology for NETs, based on a unique combination of characteristics. This typology was identified through clustering –a methodology that is scarcely used in entrepreneurial team research. Clustering allowed the identification of two types of teams that fulfilled the internally homogeneous and externally heterogeneous criteria that are essential in validating cluster models. This approach has provided a holistic, rather than a simplistic, understanding of how teams are formed, revealing the unique combinations that prevail in the context of the nascent stage that result from the tendency of team members towards a balance between best-fit or complementarity criteria.

Third, this thesis makes a significant contribution by identifying the team characteristics necessary to perform effectively at the nascent stage and adding to the current literature

by specifying the moments at which the composition plays an important role in achieving success. In this sense, NET composition, studied through one (separated entities) or multiple dimensions (typology), has been shown to be important when a team tries to formally start operations. After that point, composition does not seem as important until the team is trying to become more profitable (i.e., covering business expenses and the owners´ salaries). So, based on these results, this thesis adds to current knowledge regarding the cause and effect of NET composition and success, finding that a random team composition is not advisable, either at the beginning of the business life-cycle, or when the team is pursuing a more economically stable status.

Chapter 8. Conclusion and Future Directions

8.1 Introduction

The purpose of this chapter is to highlight the contributions to the field of entrepreneurial research and consider the implications for the literature on nascent entrepreneurial teams. The chapter is divided into four sections. The first section presents the key findings in relation to the three research questions and sub-questions presented in Chapter 1. The main conclusions of the dissertation are presented in section two, by framing the findings in relation to the theoretical principles of homophily and the rational process model, or cognitive resource perspective. Section three explains the contributions to theory and practice and outlines the implications for policy. Finally, section four discusses the study limitations and sets out future research directions.

8.2 Key findings

The aim of this thesis is to investigate NET compositions, using eight variables (gender, age, ethnicity, education, industry experience, start-up experience, resources and familiarity) grouped under four constructs (demographic diversity, human capital, resource heterogeneity, and familiarity) and study the compositional effects using three metrics of success (first sale, profitability type I, and profitability type II). In order to achieve this aim, three research questions and two sub-questions were raised, and answers were sought through empirical analysis.

Research Question 1: *What types of composition are prevalent in NETs?*

Key Findings: Overall, teams with heterogeneous compositions in gender and resources and homogeneous compositions in age, ethnicity, human capital (education, industry experience, and start-up experience) and teams formed by copreneurs are more common.

Research Question A: *What compositional dynamics can be observed in the NET over time?*

Key Findings: NET composition presented little or no significant change over time. The

initial NET structure remained constant over a period of at least five years, regardless of the entry or exit of members.

Research Question B: *How do the different compositional constructs used in this study relate to or influence each other?*

Key Findings: The purpose of this sub-question was to determine constructs that jointly explain nascent entrepreneurial team compositions or study the possibilities of a compositional match. For example, a NET with homogeneous composition in one construct shares homogeneous composition with another construct. Seven pairs were found to be sharing compositional similarities or differences. These seven compositional characteristics rest on the principles of familiarity and age of team members. The study also revealed that when studying the relationship among three variables only four combinations were significant and were associated with familiarity and gender. These findings indicate that composition patterns emerge, thus to better understand team formation and composition, it is necessary to consider multiple perspectives and dimensions rather than one or two at a time.

Research Question 2: *What different team profiles or types can be identified among NETs characterised based on their compositional dimensions?*

Key Findings: Studying the four compositional constructs simultaneously produced two team profiles: cluster 1 and cluster 2. Cluster 1 grouped teams with members who are family, friends or gender-homogeneous colleagues who possess heterogeneous configurations in both start-up experience and education levels. Teams belonging to this group have access to financial assistance (i.e. equity, loans or loan guarantees). Cluster 2 consists of teams with closely related members (often copreneurs) who benefits from being gender-heterogeneous. These teams are also characterised by homogeneous compositions in start-up experience and education. Teams in Cluster 2 did not have access to financial assistance through any team members. Overall, this indicates that teams can possess both homogeneous and heterogeneous compositional characteristics

at varying ratios, and that ownership of financial resources is a clear indicator to differentiate teams in clusters 1 or 2.

Research Question 3: *What effect does NET composition have on nascent entrepreneurial success?*

Key Findings: The study revealed that NET composition has a significant effect on two of the three metrics of success: first sale and profitability type II. Four variables of NET composition explain the likelihood of teams achieving first sale: gender, ethnicity, education and resources. The findings showed that gender-heterogeneous and resource-heterogeneous teams are more likely to achieve the first sale compared to those teams with homogeneous compositions. It was also found that homogeneous-NETs in ethnicity and education are more likely to make the first sale compared to NETs which are diverse in these two characteristics. This tendency changes when success is measured using profitability indicators. In such cases, NETs are benefited from age diversity and by forming a team of members who are family, friends and colleagues outside close family (copreneurs and those in romantic partnerships). These arrangements positively impact on nascent entrepreneurs' ability to make profits that covers the salaries of the ownership team. The study showed that although certain NET compositions can have a positive effect on success, the compositional effects on the time taken to achieve any of the three milestones are negligible. Finally, when looking at NET composition from a typological approach, NETs of Cluster 2 are more likely to achieve first sale compared to NETs in Cluster 1. That is, NETs formed by copreneurs who share the same level of education and start-up experience, are gender-diverse and lack of financial assistance, are more likely to make their first sale. In contrast, teams belonging to Cluster 1 were more likely to make profits from the sales and cover expenses and the owners' salaries compared to Cluster 2. This indicates that teams formed by family, friends and colleagues, who have different education and start-up experience, and have financial assistance have a better chance of taking their business to a more economically stable status.

8.3 Main conclusions

As Klotz *et al.* (2014) state: "[a]s entrepreneurship research has matures, scholars have

increasingly recognised that the formation of new ventures is commonly accomplished by teams as opposed to lone entrepreneurs" (p.226). Thus, recent research has focused on formation and composition to study teams' processes and outcomes. Yet, further investigation of team formation and composition during the nascent stages of the business life cycle is necessary to better understand behaviours during starting a business (Klotz *et al.*, 2014). Therefore, this thesis investigates links between NET composition and success by applying the theoretical principles of homophily and its counterparts, the rational process models and cognitive resource perspective (Byrne, 1971; Horwitz, 2005; Aldrich and Kim, 2007; Vogel *et al.*, 2014). There was a need to conduct exploratory assessments due to limited conceptual and empirical work on the topic of nascent entrepreneurial teams. The exploratory analysis also made it possible to extend the current findings by considering what Steffens *et al.* (2012) call a constellation of variables in NET composition. In addition, the thesis explored multiple dimensions of the dependent variable to better capture the nuances and complexity associated with nascent entrepreneurial success.

To understand NET composition as a whole, it was necessary to first clarify the team compositional dimensions as separate entities. The simple or individualised consideration of NET compositional structures supported the theoretical perspective that suggests people 'match' their characteristics with others when joining a team to explore the opportunities of starting a new business. While the over-representation of teams with gender and resource diversity can be explained by the rational process model which supports the rationale for entrepreneurs starting teams with those different to themselves, hence, benefiting from a broad range of talents and resources. The existence of homogeneous team compositions in terms of age, ethnicity, HC, and familiarity, is explained by homophily principles.

The research presented in this thesis also extended its scope from a narrow view often taken in existing team research (where each individual team compositional dimension is studied to make generalised claims around cause and effects of team compositions) to analyse the potential associations and differences between the compositional constructs. To do so, this thesis assumed a typological approach by contemplating the four dimensions of NET composition simultaneously. One of the most striking findings from

this approach is that a NET possesses both homogeneous and heterogeneous characteristics. This indicates that team members are looking for others who can complement their weaknesses while, at the same time, they need to feel certain degree of trust due to share similarities in other respects. This suggests that members whose decision to enter team-based venture is governed by a combination of factors.

Consideration of three dimensions of success suggests that different NET compositions have differential effects on the three milestones considered. For instance, when making the first sale is considered as success indicator, the study shows that heterogeneous compositions in gender and resources and homogeneous compositions in education and ethnicity are more likely to achieve the first milestone. In contrast, NET composition as predictor of success did not offer a strong explanation for making a surplus in revenues that cover the business expenses. However, the composition of the team does have an effect on whether or not the team is able to make profits from their business (profitability type II). In such a case, the study showed that heterogeneous compositions in age and teams formed by family, friends and colleagues are more likely to achieve profitability type II as success indicator.

This thesis also offers a more holistic understanding of the effect of NET composition on success by studying NET profiles. The findings suggest that, when the NET is configured by members who are family, friends and colleagues, are gender-homogeneous, possess different experience and knowledge, and financial assistance; they are more likely to found a profitable business. This indicates that teams with a profile that matches the one described are more likely to make a profit as they take advantage of contrasting ways of thinking (Vogel *et al.*, 2014) and operational synergies (Wright and McMahan, 2011), while at the same time are able to build a trusting environment (Kim and Aldrich, 2006) with high levels of empathy and sympathy (D'hont *et al.*, 2016).

Overall, this thesis identified the predominant structures or compositions of NETs which are shown to remain stable at least during the first five years. This thesis also identified how different compositional dimensions work in combination including defining two main types of NET profiles largely divided based on their physical proximity but containing homogeneous and heterogeneous characteristics. In terms of identifying the composition relevance to outcomes, this thesis concludes that to achieve different types

of milestones the relevance of composition varies. In the first sale, composition matters in such a way that ethnic-homogeneous, education-homogeneous, gender-heterogeneous and resource heterogeneous teams provide favourable conditions for the team to achieve this success indicator. For the second milestone, however, because it is a step-up from achieving the first sale, none of the compositions constructs are significant. Nevertheless, when the team is trying to make money to cover expenses and salaries, the composition again provides some explanations as different arrangements (age-heterogeneous and 'others') promote this outcome.

Interestingly, some controls provide a clear explanation for the business to formally start operations by making their first sale while another has a clear explanation for teams starting to generate profit. To make the first sale, two controls are relevant: the time taken for entrepreneurs to invest in the business, and the difference between necessity and opportunity-based entrepreneurship. The first control suggests that team members' passion, interest and perseverance provide a strong explanation in relation to making the first sale (Alstete, 2008). The second control indicates that teams who are motivated by both, necessity and opportunity, are more prone to make their first sale as some members are pushing to get the outputs out of the nascent business (necessity), while the other entrepreneurs are trying to make things work according to the business idea (opportunity) (Bhave, 1994). To generate profits that covers the expenses and the owners' salaries, one control is relevant: the industry in which the venture operates. Teams initiating activities in a manufacturing industry are in a more favourable position to make the first sale and make profits out of the business for their personal benefit as this type of industry even though they face more barriers entries, they are more likely to require unique capabilities compared to trading industries (Cooper *et al.*, 1994).

Lastly, in relation to the study of NET profiles, this study analysed the relationship between the two configurations and achieving high nascent entrepreneurial progress (i.e. achieving the three milestones during the five-year period of the study). By doing so, this thesis concluded that NETs which are diverse and formed by family friends and colleagues have more opportunities to make money for the team and generate profit from the nascent business in comparison to configurations largely composed by copreneurs with homogeneous characteristics. According to the findings, it was possible to conclude

that it is neither a heterogeneous nor a homogeneous composition that positively affect nascent entrepreneurial success, but the correct composition of individual attributes that matters (Horwitz, 2005).

8.4 Contributions

This thesis makes three distinct contributions. First, this research contributes to the current team and entrepreneurship literature (Klotz *et al.*, 2014; Jin *et al.*, 2016), the former by studying nascent entrepreneurialism, and the latter by focusing on team, rather than solo, efforts. It adds to the entrepreneurship literature by applying team formation theory (i.e., homophily, similarity-attraction paradigm, rational process model, cognitive resource perspective theory) to NETs (Byrne, 1971; Bird, 1989; McPherson *et al.*, 2001; Vogel *et al.*, 2014). These theories appear to be efficient in capturing the reasons why people choose particular individuals when starting a team, leading to heterogeneous or homogeneous compositions, and teams with high or low degrees of proximity. Even though teams have previously been investigated using TMT and small business frameworks, little is known about the extent to which the findings can be applied to entrepreneurial teams, and even less when studying entrepreneurial team formation and composition at the nascent stage (Ruef *et al.*, 2003; Steffens *et al.*, 2012; Brannon *et al.*, 2013; Muñoz-Bullon *et al.*, 2015). In addition, the existing literature on team composition has focused on particular compositional aspects (Foo, 2011; Schjoedt *et al.*, 2013; Coad and Timmermans, 2014; Klotz *et al.*, 2014), while overlooking others, or has narrowed the scope to dyadic teams (Harper, 2008). Thus, this thesis adds to the current knowledge of entrepreneurial teams at the nascent stage, revealing those that are more prevalent, in terms of compositional constructs as separated entities, and as a configuration.

The consideration of multiple constructs, based on the principles and understanding of team formation theories, is particularly fruitful as, for the first time, it extends the current understanding of team composition that is based on single to multiple dimensions, and their interactions. From the single dimension approach, the findings show that homogeneous types of compositions are predominant in most of the composition items measured (six out of eight). That is, the best-fit and trust criteria drive team member selection in terms of age, ethnicity, human capital and familiarity; although instrumentalism and complementarity offer explanations for team member selection in

relation to each member's resources and their gender (Byrne, 1971; Bird, 1989; McPherson *et al.*, 2001; Vogel *et al.*, 2014). In this sense, the conclusion is that team formation is mainly explained by homophily and similarity-attraction paradigm theories. Nonetheless, from the multidimensional approach, these findings further show that NETs look for certain equilibria between homogeneous and heterogeneous compositions, but always prioritise close types of relationships between the members.

Second, this thesis makes a significant and innovative contribution to the literature and the methodology by adopting a typological approach to studying NETs. This study constitutes one of very few that have utilised clustering to create a typology in nascent entrepreneurial research (Woo *et al.*, 1991; Korunka *et al.*, 2003). Furthermore, this is the first NET typology proposed under the framework of team composition that utilises diversity and proximity as a conceptual basis for explaining team member selection. As a result, two profiles of NETs have been identified that capture the interdependency among the four compositional constructs: demographic diversity, human capital, resource heterogeneity and familiarity.

Third, this research contributes to the current knowledge base regarding cause and effect relationship between NET composition studied by diversity and physical proximity and nascent business outcomes (DeSantola and Gulati, 2017). The current understanding is that successful entrepreneurs (when analysed as a solo effort) have a certain profile (Carter *et al.*, 1996; Vyakarnam *et al.*, 1999; Klotz *et al.*, 2014), but little research had been performed to explore how a combination of different or similar profiles impacts on the long-run odds for a nascent business. Thus, this thesis adds to the literature in showing that individuals' characteristics, resulting in homogeneous or heterogeneous compositions, and their type of relationship do influence their odds of success. Furthermore, these findings not only add to our understanding of whether or not team composition influences nascent entrepreneurial outcomes, but also make a contribution by explaining which characteristics are important and provide an advantage, depending on the team´s aims (i.e., achieving a first sale, covering the business expenses, or covering the owners' salaries). In doing so, the findings in this thesis help us to elucidate the little research that has been performed in regard to the impact of NET composition and entrepreneurial outcomes (Klotz *et al.,* 2014). This clarification was achieved by: a)

utilising finer-grained measures of diversity, avoiding a superficial understanding of what diversity and physical proximity entail, b) by performing a congruent operationalisation of the predictor variables (Harrison and Klein, 2007), and c) by utilising three metrics of success, which reveal, with more accuracy, when NET composition matters.

As a result, the findings show that the cause and effect relationship changes depending not only on the outcome used to measure success but also on whether NET composition is studied through its separated entities, or, if it is studied from a multidimensional perspective. As separated entities, this thesis concluded that heterogeneous compositions of gender and resources, and homogeneous compositions of ethnicity and education, are beneficial to making a first sale; however, the level of team diversity does not seem to be a good predictor of the second metric of success, which means that composition does not play a significant role in relation to whether the company is making revenue that is good enough to cover their expenses (profitability type I). Finally, team diversity, regarding team member age and a less close relationship, improves the odds of making a profit from which the business can cover the owners' salaries and possibly support a business growth plan (profitability type II). Furthermore, the results from the typology developed in this thesis provided the opportunity to analyse the relation of such 'gestalts' to entrepreneurial success. This leads to a more holistic understanding of the effect of composition on nascent outcomes, and addresses the gap identified in the team composition literature, as no previous research has studied the composition of NETs in a multivariable and configurational manner, or their effects on success (Jin *et al.*, 2016). Therefore, from a multidimensional perspective, the results show that a team formed by copreneurs who share the same level of education and start-up experience, are gender-diverse and lack of financial assistance face a brighter scenario when trying to make a first sale. Nonetheless, those teams with the exact opposite profile have a better chance of reaching a more economically stable status where they can cover not only the business expenses, but also the owners´ salaries.

8.4.1 Implications for practitioners

The findings of this thesis will be of interest to two groups of practitioners in particular. The first group includes NET members and individuals who have the intension and/or

are in the very early stage of considering a new venture formation as a career path. These prospective entrepreneurs can learn what potential issues they could face due to their composition, leading them to take actions that could turn weaknesses into advantages. Practitioners should consider that, while some composition-related factors are relevant to making the first sale and starting business operations, others are crucial to pursuing a more profitable status that allows them to cover owners' salaries from business revenues. During the start-up process, owners can use the learning from this research to make informed decisions about current and future needs when making offers to other members to join the team.

Second, the thesis has implications for consultants and advisory bodies. The research findings will benefit this group by identifying the factors that prevent new businesses becoming established and profitable. In such cases, consultants and advisory bodies should be aware of what circumstances during the start-up process, heterogeneous and homogeneous compositions are beneficial for the team to achieve success, as diversity fosters creativity by harnessing different ways of thinking, and homogeneity improves communication and team cohesion (Byrne, 1971; Horwitz, 2005; Aldrich and Kim, 2007; Horwitz and Horwitz, 2007; Vogel *et al.*, 2014). Findings from this research are important to guide their clients to make sure the teams they form face a favourable scenario when establishing a business. Lastly, the findings in this thesis are useful for practitioners to design better support programmes or training courses for entrepreneurs.

8.4.2 Implications for Policy Development

Given the shift of attention from solo entrepreneurs to team entrepreneurial efforts (Kamm and Nurick, 1993; Gartner *et al.*, 1994; Cooper and Saral, 2013; Klotz *et al.*, 2014), there are a number of potential policy implications arising from the results of this thesis. The NET initial composition studied here highlights points of reflection which are important to consider as they may help more new businesses succeed. This is important, since entrepreneurship "has emerged as a bona fide focus of public policy, particularly with respect to economic growth and employment creation" (Audretsch *et al.*, 2007, p.1). While this thesis does not explicitly concern itself with entrepreneurial policy, the findings suggest a number of modifications to existing practices which have implications for policy refinements (see Table 8.1).

Table 8.1 Findings and policy implications

Finding/Consideration	Implication
NET diversity in some aspects of their composition (gender and resources), help the business to make the first sale.	• By promoting mixed gendered teams, positive results from entrepreneurial efforts can be achieved.
	• Access to human, financial and physical resources; help the team to overcome entrepreneurial hurdles while at the same time increases the NET potential of running a fully-fledged business.
NET homogeneous compositions in some demographics and human capital aspects influence the achievement of making the first sale of the firm.	• Entrepreneurs sharing the same background and set of beliefs given their common ethnical background work better when starting a business.
	• Investment in the current programmes at the medium level of education (i.e. technical or vocational degree, some college, community college or bachelor degree) can be encouraged to increase the knowledge base necessary for entrepreneurs to run successful ventures.
Diversity in NET in regard to age and members related by other type of relationship but the 'romantic' one, outperform in the entrepreneurial activity when compared to individuals with the same age and couples starting a business.	• The combination of knowledge, and skills from more experienced entrepreneurs and young entrepreneurs leads towards a profitable business.
	• Teams formed by individuals who are family, friends and colleagues are presume to benefit from the strong relationship and at the same time are lesser rigid in comparison to copreneurs who interact in and out the entrepreneurial activity.
The profile or configuration of the NET can benefit or obstruct the nascent business progress.	• NETs which configuration is homogeneous in terms of education and experience, is gender diverse, do not have financial assistance, and are formed by couples; promote the achievement of making the first sale. • NETs which configuration is diverse in aspects such as education and experience, homogeneous in gender, have financial assistance, and are formed by family, friends and colleagues; are more likely to generate profits that would cover not only the business expenses but also the owners' salaries.

Finding/Consideration	Implication
	• Entrepreneurs starting a business as a team may need to change their composition to adapt to the environment needs or seek for further guidance to reach a profitable and economically stable business.

8.5 Limitations and future research

Similar to other investigations, this thesis has limitations that should be acknowledged and carefully considered when designing and developing future research projects. The key limitation rests on the quality of the dataset used in this study. This aspect is further explored below in section 8.5.1. One of the most important limitations is the dataset's generalisability. Even though the present findings are generalisable to a considerable geographic area, they are limited to a single country: the US. Therefore, future studies should be designed to allow producing generalisable findings around nascent team venture formation across multiple countries and cultures.

This thesis focused on NETs and how the composition affects the development of the business. Previous authors have argued, assessing success and performance in the early stages of a business is a difficult task (Amason *et al.*, 2006; Schoonhoven *et al.*, 2009). Therefore, this thesis used three dimensions of success that are widely recognised in the literature, which makes the findings more fruitful and helps to portray which type of composition can promote success during the nascent stage. The study revealed that, while heterogeneous or homogeneous compositions in some respects are needed to achieve the initial milestone (first sale), others are important when the NET is trying to make profit from the business. This study did capture how NET composition promotes or obstructs nascent business progress but does not consider if the business will keep functioning or have higher possibilities for survival in the long-term. Thus, future investigations might ask what outcomes foster prosperous and long-lived businesses. Taking this approach could add to the current debate about which nascent entrepreneurial outcomes are more suitable to portrait performance or success as it will identify which outcomes truly help the business to avoid failure.

Other promising avenues for future research are related to the changing nature of

entrepreneurial efforts. Key progress in the study of how team composition changes or remains stable has been made by Hellerstedt and Aldrich (2008), and Ucbasaran *et al.* (2003). However, this points to at least two avenues of future research. First, it would be interesting to study how the different profiles (clusters) identified in this thesis change over time, and whether teams change to more or less diverse compositions, and in what aspects. Second, future research could also investigate how the team composition -its individual components and the profiles- change throughout the business life cycle, and not only when businesses are at the nascent stage.

The entrepreneurship literature has found that, broadly, teams outperform solo efforts (Kamm *et al.*, 1990; Schjoedt *et al.*, 2009; Sonderegger, 2010; Zhou and Rosini, 2015), and teams are more likely to start a business than solo-heroic entrepreneurs. Thus, following the changing nature of entrepreneurial activity argument, future research could study if individual efforts become team-based efforts over time, or if NETs give up their team structure to take solo ownership later on in the business life-cycle and the implications of these changes to entrepreneurial success. This will enable a more meaningful exploration and comparison of individual versus team-based nascent entrepreneurial efforts and elicit more conclusive statements regarding which form is more promising when starting a business.

Finally, following Burton *et al.* (2009) research regarding the role of helpers and key supporters in the entrepreneurial effort, it would also be interesting to consider a broader scope regarding the definition of NETs. This research has defined a team as those people who share ownership, but there are others such as helpers and key supporters who, regardless of their ownership rights, support the nascent business and provide their knowledge, skills, experience and resources. Therefore, the role these additional members supporting a nascent entrepreneurial team effort and the resulting compositional variations are important aspects to study in future research.

8.5.1 A critical self-reflection of data: PSED II as a secondary dataset

This section presents a critical evaluation of the use of PSED II as a secondary dataset for studying NETs. It is a self-reflection taking into account the opportunities offered by the PSED II data to study NET composition and its effect on success, the challenges it poses

to study the topics of interest, and the limitations it sets in achieving its full potential.

Much of the current literature has studied entrepreneurial teams in the later stages of the entrepreneurial cycle (infancy or adolescence),[22] while very little attention has been paid to the initial stage – the gestation. Investigating the gestation or nascent stage is a difficult endeavour due to the difficulty of empirically tracing these entrepreneurs. This becomes even more challenging when the researcher aims to study the entire team by taking data from individual members that form the team. Also, it is important to mention that when studying both input and output dimensions in one study, longitudinal data are used to separate-out the causes from the effects. In a three-year PhD, this is only possible to achieve with secondary data. The US PSED I and II datasets and their international counterpart studies have proved to be invaluable sources for researchers examining the nascent stage of entrepreneurial businesses. According to the official website[23], up to 2017, these datasets have been used in more than 150 published articles in leading journals, including Entrepreneurship Theory and Practice, Journal of Business Venturing and Small Business Economics. Even though these datasets have enabled researchers from around the world to study the initial stage of the business life course, they also have certain limitations.

First, the data on NETs in PSED II is reported by one team member, and respondents might not report accurately about other members including their age, education or time invested in the business, among other things. For instance, although the key respondent who provided data on behalf of the other members in the team was aware of the resources he/she was contributing to the business, their awareness about the resource contributions from other team members can be very limited. There is also a recall bias involved, although the data was collected at the same time the team was forming and the entrepreneur was taking the first steps in establishing the business.

Second, the dataset is unsuitable for performing panel analysis to study team composition and its effect on success. The information about each team member (education levels, work experience, *etc.*), including the respondent, was only registered in Wave A, thereby

[22] Reynolds (1994) described four phases in the entrepreneurial cycle: conception, gestation, infancy and adolescence.
[23] http://www.psed.isr.umich.edu/psed/home.

making it difficult to identify with total certainty if any changes to these variables have occurred over time. Although it is acceptable that some of the compositional variables do not change over time, it is logical to assume that some others can (e.g. work experience).

Third, given that the thesis seeks team-level explanations for nascent entrepreneurial success and the secondary data is in a panel format, the most obvious option for measuring the cause and effect relationship was by using panel techniques. However, the independent variables which were calculated using diversity or proximity measures did not reflect any significant changes. This could possibly be the result of PSED II treating the majority of the explanatory variables as time invariant. Hence, fixed effect and random effect analysis were not ideal, as there was little or no variation in the variables of interest across time (Rabe-Hesketh and Skrondal, 2008). This is problematic and set limitations to meaningfully study the cause-effect relationships using panel data.

Fourth, based on the results obtained when exploring the analytical technique that would address the research questions posed in this thesis, the dataset not only did the data failed to support panel data analysis but also set restrictions on event history and survival analysis. Similar studies using event analysis to measure entrepreneurial team composition and its effect on outcomes based on data from other panel data have reported significant findings. Hmieleski and Ensley (2007), for example, studied two samples, one from Dun and Bradstreet and the other from Inc. Magazine. Geographically, both were in the US like PSED II. However, their models reported that heterogeneity significantly contributes to the model in both scenarios. The different results might be due to the stage of the businesses that are included in the two studies; while PSED II included a sample of nascent entrepreneurs, Hmieleski and Ensley's (2007) study focuses on more mature enterprises. Another potential explanation is related to the way the predictors were operationalised as a single heterogeneity index, while this thesis has calculated separate indexes.

Studying the nascent enterprise context is a challenge itself but aiming to study the team as the unit of analysis add further complexity to the study. PSED II is not a perfect dataset, several authors have highlighted its limitations. However, the dataset also possesses several advantages. To begin, the PSED II offers free data to research complex phenomena based on the team level. A research project that can provide near generalisable findings

such as the one presented in this thesis requires a considerable amount of money and time to collect primary data not always available to the researcher. Lastly, PSED II helped study the cause and effect relationship between NET composition and success, allowing a reasonable time lag between the measures of composition to that of success, which according to Reynolds and Miller (1992), the majority of nascent efforts take three years or less to progress in the business life-cycle. Thus, the five-year time period covered in the PSED II study is particularly beneficial.

Overall, PSED II has limitations but also offers a panel dataset from a representative sample that provides a reasonable starting point to investigate various aspects of nascent entrepreneurship. This thesis, for instance, offers a strong explanation of nascent entrepreneurial businesses started by teams, studying the composition, typology and effect on future success.

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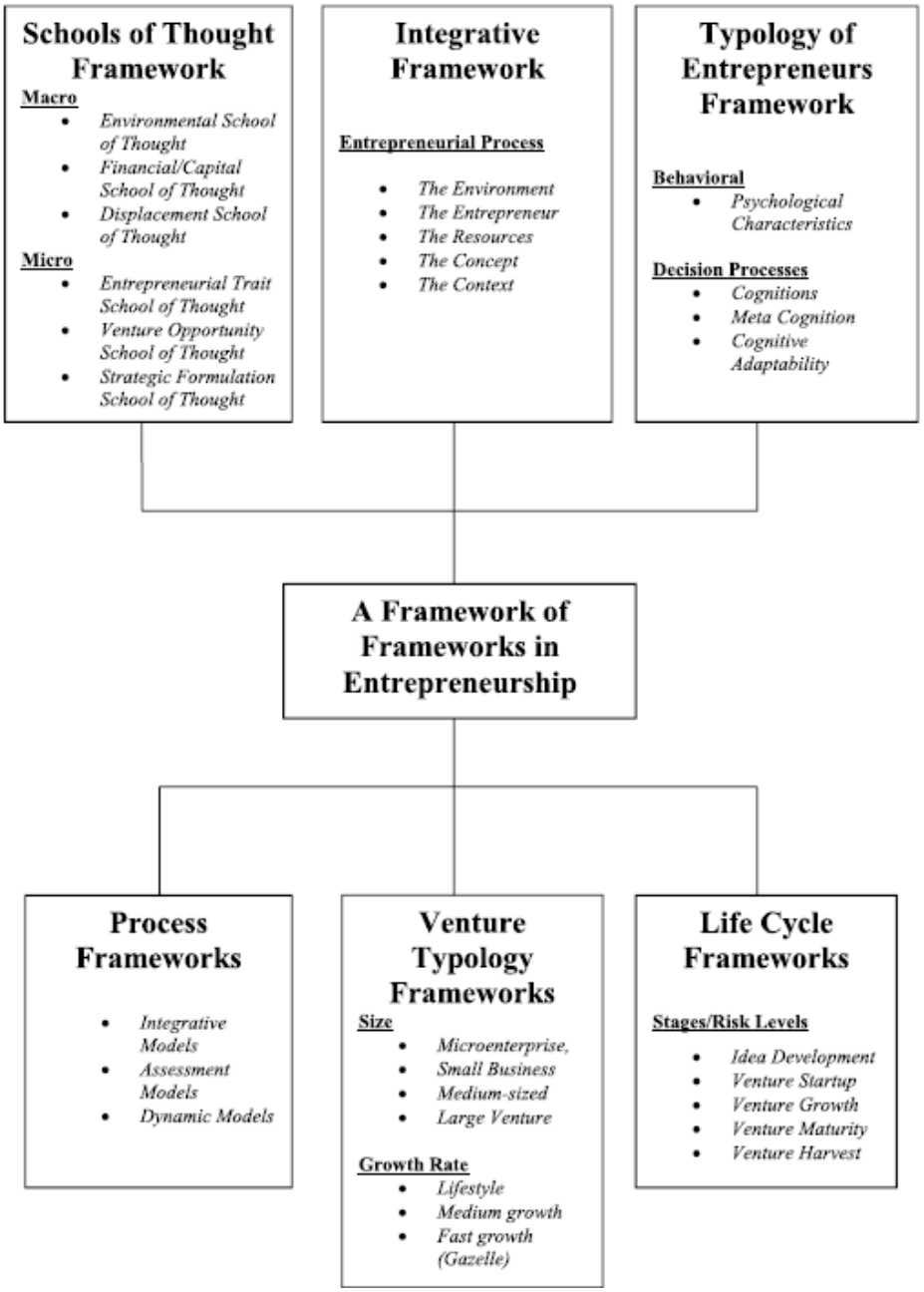
Appendices

Appendix 1 Framework of Frameworks Approach



Source: (Kuratko *et al.* 2015, p.9)

Appendix 2 – Articles from Jin et al. (2016)'s meta-analysis that handled heterogeneity measures

No	Author name (year)	Sample Size	Sample source	Label	Aggregated characteristics	Heterogeneity of characteristics	Dependent Variable (Performance)	Technique
1	Amason, Shrader, and Tompson (2006)	174	IPO prospectuses (US). (6 YEARS OLD OR UNDER NEW VENTURES)	TMT		Age Heterogeneity Education Heterogeneity Major Heterogeneity Functional Heterogeneity	Sales growth	Hierarchical regression
2	Aspelund, Berg-Utby, and Skjevdal (2005)	80	Scandinavian technology-based start-ups. (Norwegian (65) and Swedish (15) new technology-based firms.)	FT	Entrepreneurial experience	Functional heterogeneity	Sales	Cox regression model
3	Beckman (2006)	141	Young high-technology firms in California's Silicon Valley	FT	Work experience	Work experience	Employee growth	Logistic Regression
4	Boeker and Wiltbank (2005)	86	1983 and 1995 in the area of the United States known as Silicon Valley	TMT	Industry experience	Functional diversity	Sales growth	Event History Analysis
5	Cai, Liu, and Yu (2013)	527	TMT members in China Chinese provinces (Northern provinces includes Jilin and Beijing, Southern provinces includes Guangdong and Fujian	FT		Functional diversity	Growth	Correlation
6	Chandler et al. (2005)	124	Panel study in which 408 new ventures in Sweden / cross-sectional survey of 124 five-year-old ventures in a western state in the United States.	ET/NVT	Industry experience	Age diversity Education diversity Function Diversity	Sales growth	Hierarchical regression
7	Ding (2011)	512	Young biotechnology firms in US	FT	Work experience	Education	Sales	Binary logistic regression
8	Eisenhardt and Schoonhoven (1990)	66	Firms that were founded between 1978 and 1985 in the U.S	FT	Work experience	Industry experience heterogeneity	Sales growth	Hierarchical regression
9	Ensley and Hmieleski (2005)	256	102 high-technology university-based start-ups 154 independent high-technology new ventures	TMT	Shared cognition Potency	Skill diversity Educational specialty diversity Educational level diversity	Revenue growth	Logit, QML Poisson and ZINB regressions

(Continues)

Appendix 2 – Articles from Jin et al. (2016)'s meta-analysis that handled heterogeneity measures

No	Author name (year)	Sample Size	Sample source	Label	Aggregated characteristics	Heterogeneity of characteristics	Dependent Variable (Performance)	Technique
10	Ensley, Pearson, and Sardeshmukh (2007)	200	Inc. 500, a group of fast growing private firms, was selected as the study sample	TMT	Potency	Pay dispersion	Revenue growth	Regression model using a four-year lag
12	Hmieleski and Ensley (2007)	66;154	Inc 500 and National random sample from Dun and Bradstreet	TMT/TMT		Functional specialty Educational specialty Educational level Managerial skills	Revenue growth Employment growth	Event-history analysis
13	Kor (2006)	77	Technology-based entrepreneurial firms that completed an initial public offering (IPO) in the medical and surgical instruments industry (SIC =3841–3845) in the United States during 1990–95.	TMT	Work experience	Functional heterogeneity	Return on assets	Cross-section regression
14	Kroll, Walters, and Son (2007)	524		TMT	Human Capital	Work background	Profits	Multiple regression
15	Leary and DeVaughn (2009)	141	Prospective start-up state banks in Florida	ET/NVT	Industry experience	Occupation diversity	Successful venture launch	t-test analysis
16	Li (2008)	90	US biotechnology industry	TMT		Functional heterogeneity	Revenue growth	Structural Equation Modelling
17	Souitaris and Maestro (2010)	129	new technology ventures listed in the London Stock Exchange in 2001	TMT	Polychronicity	Age diversity Tenure diversity Education diversity	Return on assets/Return on sales	Hierarchical Regression Model
18	Taheri and van Geenhuizen (2011)	99	Spin-off firms from two universities, Delft University of Technology in Delft, the Netherlands, and National Technical University of Norway in Trondheim, Norway	FT	Work experience	Social background	Survival	Random effect model
19	Vissa and Chacar (2009)	84	Indian software ventures. (less than 6 years)	ET/NVT	Start-up experience	Functional diversity	Revenue growth	

(Continues)

Appendix 2 – Articles from Jin et al. (2016)'s meta-analysis that handled heterogeneity measures

No	Author name (year)	Sample Size	Sample source	Label	Aggregated characteristics	Heterogeneity of characteristics	Dependent Variable (Performance)	Technique
20	Xue (2011)	98	(Chinese)	ET/NVT	(Chinese)	Sex diversity Age diversity Education diversity Industry experience diversity Function experience diversity	Sales growth	Logistic Regression
21	Yang, Tian, Zhang, and Wang (2010)	150	(Chinese)	ET/NVT	(Chinese)	Industry heterogeneity Function heterogeneity Sex heterogeneity Age heterogeneity Education heterogeneity	Production innovation	'

Note: ET= Entrepreneurial Team, NVT= New Venture Team, TMT= Top Management Team, TF= Founding Team
Source: Modified from Jin *et al.* (2016, pp.10-13)

Appendix 3 – Articles from Panel Study of Entrepreneurial Dynamics related to team composition

No	Author name (year)	Sample Size	Sample source	Label	IV	DV	Moderating Variable	Technique	Heterogeneity measures
1	Brannon et al (2013)	295	US PSED I	Dyad teams	Biological Linkage Couples Non-family teams Investment on Financial Capital	First Sale	NA	Event History Analysis	NA
2	Muñoz-Bullon et al (2005)	287	US PSED II	Teams	Resource Heterogeneity	Profitability (Cash flow)	Previous Start-up experience Previous team industry experience	Logistic Regression	Yes (Resource Heterogeneity)
3	Ruef et al (2003)	816	US PSED I	Foundin g teams	Homophily (Gender and ethnicity) Functionality (Occupational diversity) Status expectations Network (Prior network ties) Ecological constraint	NA	NA	Structural Event Analysis	Not specified
4	Thiess et al (2016)	475/519	US PSED II	Nascent Venture Team	Heterogeneity of management experience Heterogeneity of industry experience Heterogeneity of start-up experience	Expected revenues in first 12 months of operations Progress after 5 years of operations	Average level of experience depth in nascent venture teams	Hierarchical Regression	Yes (Euclidean distance)
5	Yang & Aldrich (2014)	362 teams & 880 individuals	US PSED II	Entrepre neurial Teams	Years of experience in the same industry Years of managerial experience Start-up experience Highest level of education Years of full time paid job	Owner is in charge of the daily operations of the new business.		Conditional Logistic Regression	NA

Appendix 4 - Items from Waves A to F used to compute the homogeneity, heterogeneity and physical proximity as independent variables.

Characteristic construct	Variable	Owner 1	Owner 2 to 5
Demographic diversity	Gender	*H1_1	*H1_**
	Age	*H2_1	*H2_**
Human capital	Education (up to 8th grade, some HS, HS degree, technical degree, some college, community college, bachelors, some graduate, masters, doctoral)	*H6_1	*H6_**
	Years of experience (in same industry as start-up)	*H11_1	*H11_**
	Other businesses started (#)	*H12_1	*H12_**
Social Network	Resource Heterogeneity		
	(introduction, information, training, financial	*H23_1	*H23_**
	assistance, physical resources, business services	*H24_1	*H24_**
		*H25_1	*H25_**
		*H26_1	*H26_**
		*H27_1	*H27_**
		*H28_1	*H28_**
Familiarity	Relationship with respondent (spouse, cohabiting partner, cohabiting relative, other relative, co-worker, other acquaintance / friend, stranger, non-cohabiting partner)		*J2 _#
	23 (OWNER 2 AND OWNER 3)		
	24 (OWNER 2 AND OWNER 4)		
	25 (OWNER 2 AND OWNER 5)		
	34 (OWNER 3 AND OWNER 4)		
	35 (OWNER 3 AND OWNER 5)		
	45 (OWNER 4 AND OWNER 5)		
	Relationship with respondent	*H8_**	
		*H8_**	
		*H8_**	
		*H8_**	
		*H8_**	
		*H8_**	

*Varies from A to F to accommodate other owners

**Varies from 2 to 5 to accommodate other owners

Varies depending the amount of members. For example, three members will be substitute as 12, 13, and 23.

Appendix 5 NET characteristics Wave A. Step before diversity.

Compositional Construct	**Variable**		**Frequency**	***Percent (%)***
Demographic Diversity	*Gender*	*Five categories*		
		Only Male	132	26.40
		Only Female	28	5.60
		Male Dominated	35	7.00
		Female Dominated	16	3.20
		Mixed gender teams	289	57.80
		Subtotal	500	100.0
Human Capital	*Education*	0	265	54.41
		0.32	2	0.41
		0.375	11	2.26
		0.4444444	35	7.19
		0.48	4	0.82
		0.5	164	33.68
		0.56	1	0.21
		0.625	3	0.62
		0.6666667	2	0.41
		Subtotal	487	100.0
	Industry Experience	0	223	46.07
		0.32	2	0.41
		0.375	20	4.13
		0.444444	39	8.06
		0.48	1	0.21
		0.5	191	39.46
		0.56	1	0.21
		0.625	1	0.21
		0.64	2	0.41
		0.6666667	4	0.83
		Subtotal	484	100.0
	Start-up experience	0	242	50.73
		0.32	1	0.21
		0.375	12	2.52
		0.4444444	32	6.71
		0.48	3	0.63
		0.5	172	36.06
		0.56	1	0.21
		0.625	6	1.26
		0.64	2	0.42
		0.6666667	6	1.26
		Subtotal	477	100.0
Resource Heterogeneity	*Resources*	0	4	0.83
		1	12	2.50
		2	38	7.92
		3	68	14.17
		4	104	21.69
		5	147	30.63
		6	107	22.29
		Subtotal	480	100.0
Familiarity	*Physical proximity*	*Seven categories*		
		Copreneurs	250	50.30
		Family related	84	16.90
		Family and close friends	29	5.84
		Open family	10	2.01
		Friends	108	21.73
		Non family	16	3.22
		Strangers	0	0.00
		Subtotal		100.0%

Appendix 6 Team Diversity descriptive analysis Wave A to C

			WAVE A				WAVE B				WAVE C			
Compositional Construct	**Variable**		**Mean**	***SD***	**Min**	**Max**	**Mean**	***SD***	**Min**	**Max**	**Mean**	***SD***	**Min**	**Max**
Demographic Diversity	*Gender*	*Two categories*	*Frequency*	*Percent*			*Frequency*	*Percent*			*Frequency*	*Percent*		
		Homogeneous	160	32.00%			73	25.61%			47	24.35%		
		Heterogeneous	340	68.00%			212	74.369%			146	75.65%		
		Subtotal	500	100.00%			285	100.00%			193	100.00%		
	Age	Coefficient of variation	0.13 (493 obs.)	0.14	0	0.73	0.13 (279 obs.)	0.14	0	0.71	0.13 (192 obs.)	0.15	0	0.69
	Ethnicity	*Two categories*	*Frequency*	*Percent*			*Frequency*	*Percent*			*Frequency*	*Percent*		
		Homogeneous	389	82.07%			241	83.39%			176	85.02%		
		Heterogeneous	85	17.93%			48	16.61%			31	14.98%		
			474	100.0%			289	100.00%			207	100.00%		
Human Capital	*Education*	*Two categories*	*Frequency*	*Percent*			*Frequency*	*Percent*			*Frequency*	*Percent*		
		Homogeneous (=0)	265	54.41%			155	56.16%			108	56.84%		
		Heterogeneous (>0)	222	45.59%			121	43.84%			82	43.16%		
			47											
		Subtotal	87	100.00%			276	100.00%			190	100.00%		
	Industry experience	*Two categories*	*Frequency*	*Percent*			*Frequency*	*Percent*			*Frequency*	*Percent*		
		Homogeneous (=0)	245	50.62%			118	42.45%			77	40.31%		
		Heterogeneous (>0)	239	49.38%			160	57.55%			114	59.69%		
		Subtotal	484	100.0%			278	100.00%			191	100.00%		
	Start-up experience	*Two categories*	*Frequency*	*Percent*			*Frequency*	*Percent*			*Frequency*	*Percent*		
		Homogeneous (=0)	242	50.73%			142	52.40%			97	51.87%		
		Heterogeneous (>0)	235	49.27%			129	47.60%			90	48.13%		
		Subtotal	477	100.0%			271	100.00%			187	100.00%		
Resource Heterogeneity	*Resources*	Resource heterogeneity index	4.3 (480 obs.)	1.4	0	6	4.5 (271 obs.)	1.3	0	6	4.60 (184 obs.)	1.30	0	6
Familiarity	*Physical proximity*	*Two categories*	*Frequency*	*Percent*			*Frequency*	*Percent*			*Frequency*	*Percent*		
		Copreneurs	250	50.30%			158	58.30%			109	58.60%		
		Else	247	49.70%			113	41.70%			77	41.40%		
		Subtotal	497	100.00%			271	100.00%			186	100.00%		

Appendix 7 Team Diversity descriptive analysis Wave D to F

			WAVE D				WAVE E				WAVE F			
Compositional Construct	**Variable**		**Mean**	***SD***	**Min**	**Max**	**Mean**	***SD***	**Min**	**Max**	**Mean**	***SD***	**Min**	**Max**
Demographic Diversity	*Gender*	*Two categories*	*Frequency*	*Percent*			*Frequency*	*Percent*			*Frequency*	*Percent*		
		Homogeneous	38	26.21%			32	24.06%			24	22.64%		
		Heterogeneous	107	73.79%			101	75.94%			82	77.36%		
		Subtotal	145	100.00%			133	100.00%			106	100.00%		
	Age	Coefficient of variation	0.12 (144 obs.)	0.13	0	0.67	0.12 (133 obs.)	0.13	0	0.66	0.11 (107 obs.)	0.13	0	0.64
	Ethnicity	*Two categories*	*Frequency*	*Percent*			*Frequency*	*Percent*			*Frequency*	*Percent*		
		Homogeneous	133	84.18%			117	81.82%			99	86.09%		
		Heterogeneous	25	15.82%			26	18.18%			16	13.91%		
			158	100.00%			143	100.00%			115	100.00%		
Human Capital	*Education*	*Two categories*	*Frequency*	*Percent*			*Frequency*	*Percent*			*Frequency*	*Percent*		
		Homogeneous (=0)	78	54.55%			69	52.27%			60	56.60%		
		Heterogeneous (>0)	65	45.45%			63	47.73%			46	43.40%		
		Subtotal	143	100.00%			132	100.00%			106	100.00%		
	Industry experience	*Two categories*	*Frequency*	*Percent*			*Frequency*	*Percent*			*Frequency*	*Percent*		
		Homogeneous (=0)	63	43.75%			56	42.75%			43	41.35%		
		Heterogeneous (>0)	81	56.25%			75	57.25%			61	58.65%		
		Subtotal	144	100.00%			131	100.00%			104	100.00%		
	Start-up experience	*Two categories*	*Frequency*	*Percent*			*Frequency*	*Percent*			*Frequency*	*Percent*		
		Homogeneous (=0)	70	50.00%			62	47.69%			53	51.46%		
		Heterogeneous (>0)	70	50.00%			68	52.31%			50	48.54%		
		Subtotal	140	100.00%			130	100.00%			103	100.00%		
Resource Heterogeneity	*Resources*	Resource heterogeneity index	4.6 (137 obs.)	1.3	0	6	4.6 (126 obs.)	1.2	0	6	4.6 (102 obs.)	1.3	0	6
Familiarity	*Physical proximity*	*Two categories*	*Frequency*	*Percent*			*Frequency*	*Percent*			*Frequency*	*Percent*		
		Copreneurs	83	58.87%			75	57.69%			63	60.58%		
		Else	58	41.13%			55	42.31%			41	39.42%		
		Subtotal	141	100.00%			130	100.00%			104	100.00%		

Appendix 8 Cross tabulation between different compositional variables distribution and 'Gender'

	Gender Homogeneous		Gender Heterogeneous					
Ethnicity	**X**	**E**	**X**	**E**	**Total**	**Chi-Square**	**df**	**Cramer's V**
Homogeneous	119	125.6	270	263.4	389	2.8250†	1	-0.0772
Heterogeneous	34	27.4	51	57.6	85			
Total	153	153	321	321	474			
Education	**X**	**E**	**X**	**E**	**Total**	**Chi-Square**	**df**	**Cramer's V**
Homogeneous	76	82.2	189	182.8	265	1.4714	1	-0.0550
Heterogeneous	75	68.8	147	153.2	222			
Total	151	151	336	336	487			
Industry Experience	**X**	**E**	**X**	**E**	**Total**	**Chi-Square**	**df**	**Cramer's V**
Homogeneous	82	76.4	163	168.6	245	1.1922	1	0.0496
Heterogeneous	69	74.6	170	164.4	239			
Total	151	151	333	332	484			
Start-up Experience	**X**	**E**	**X**	**E**	**Total**	**Chi-Square**	**df**	**Cramer's V**
Homogeneous	69	76.6	173	165.4	242	2.440	1	-0.0686
Heterogeneous	82	74.4	153	160.6	235			
Total	151	151	326	326	477			
Resource Heterogeneity	**X**	**E**	**X**	**E**	**Total**	**Chi-Square**	**df**	**Cramer's V**
0	1	1.3	3	2.7	4	2.6667	6	0.0745
1	5	3.8	7	8.2	12			
2	11	12.1	27	25.9	38			
3	25	21.7	43	46.3	68			
4	36	33.1	68	70.8	104			
5	42	46.9	105	100.1	147			
6	33	34.1	74	72.9	107			
Total	153	153	327	327	480			
Familiarity	**X**	**E**	**X**	**E**	**Total**	**Chi-Square**	**df**	**Cramer's V**
Copreneurs	4	79.0	246	171.0	250	209.3501***	1	-0.6490
Others	153	78.0	94	169.0	247			
Total	157	157	340	340	497			

X=Observed value; E= Expected value, df= degrees of freedom
Significance levels: †<.10; *<.05; **<.01; ***<.001.

Appendix 9 Differences in NET mean age scores by compositional variable (T-test)

	Groups	Levene's Test for Equality of Variances		T-test for equality of Means			
		F	Sig.	n	$\bar{X}$	SD	t-test
Gender	*Homogeneous*	0.49	0.49	154	-2.24	1.01	3.21**
	Heterogeneous			297	-2.56	0.99	
Ethnicity (unequal)	*Homogeneous*	4.53	0.03	354	-2.45	1.04	0.68
	Heterogeneous			77	-2.53	0.92	
Education	*Homogeneous*	1.23	0.27	238	-2.52	1.03	-1.57
	Heterogeneous			204	-2.37	0.99	
Industry Experience	*Homogeneous*	0.84	0.36	223	-2.43	0.99	0.71
	Heterogeneous			216	-2.50	1.03	
Start-up experience (unequal)	*Homogeneous*	2.93	0.09	217	-2.65	0.96	-4.29***
	Heterogeneous			215	-2.24	1.04	
Familiarity (unequal)	*Copreneurs*	7.11	0.01	212	-2.87	0.86	-9.18***
	Others			238	-2.07	0.99	

Significance levels using a two-tailed t-test: †<.10; *<.05; **<.01; ***<.001

Appendix 10 Cross tabulation between different compositional variables distribution and 'Ethnicity'

	Ethnicity Homogeneous		Ethnicity Heterogeneous					
Education	**X**	**E**	**X**	**E**	**Total**	**Chi-Square**	**df**	**Cramer's V**
Homogeneous	207	205.3	43	44.7	250	0.1746	1	0.0194
Heterogeneous	174	175.7	40	38.3	214			
Total	381	381	83	83	464			
Industry Experience	**X**	**E**	**X**	**E**	**Total**	**Chi-Square**	**df**	**Cramer's V**
Homogeneous	192	190.7	40	41.3	232	0.0952	1	0.0144
Heterogeneous	187	188.3	42	40.7	229			
Total	379	379	82	82	461			
Start-up Experience	**X**	**E**	**X**	**E**	**Total**	**Chi-Square**	**df**	**Cramer's V**
Homogeneous	191	191.0	41	41.0	232	0.0001	1	0.0003
Heterogeneous	186	186.0	40	40	226			
Total	377	377	81	81	458			
Resource Heterogeneity	**X**	**E**	**X**	**E**	**Total**	**Chi-Square**	**df**	**Cramer's V**
0	4	3.3	0	1	4	4.9359	1	0.1039
1	8	9.8	4	2	12			
2	25	27.9	9	6.1	34			
3	52	52.5	12	11.5	64			
4	83	82.1	17	17.9	100			
5	117	114.9	23	25.1	140			
6	86	84.5	17	18.5	103			
Total	375	375	82	82	457			
Familiarity	**X**	**E**	**X**	**E**	**Total**	**Chi-Square**	**df**	**Cramer's V**
Copreneurs	203	197.7	38	43.3	241	1.6173	1	0.0585
Others	185	190.3	47	41.7	232			
Total	388	388.0	85	85	473			

X=Observed value; E= Expected value, df= degrees of freedom
Significance levels: †<.10; *<.05; **<.01; ***<.001.

Appendix 11 Cross tabulation between different compositional variables distribution and 'Education'

	Education Homogeneous		Education Heterogeneous					
Industry Experience	**X**	**E**	**X**	**E**	**Total**	**Chi-Square**	**df**	**Cramer's V**
Homogeneous	139	130.5	100	108.5	239	2.4230	1	0.0713
Heterogeneous	121	129.5	116	107.5	237			
Total	260	260	216	216	476			
Start-up Experience	**X**	**E**	**X**	**E**	**Total**	**Chi-Square**	**df**	**Cramer's V**
Homogeneous	140	131.8	101	109.2	241	2.3216	1	0.0703
Heterogeneous	117	125.2	112	103.8	229			
Total	257	257	213	213	470			
Resource Heterogeneity	**X**	**E**	**X**	**E**	**Total**	**Chi-Square**	**df**	**Cramer's V**
0	3	2.2	1	1.8	4	2.3347	6	0.0705
1	7	6.6	5	5.4	12			
2	22	20.8	16	17.2	38			
3	39	36.1	27	29.9	66			
4	54	56.9	50	47.1	104			
5	80	78.7	64	65.3	144			
6	52	55.8	50	46.2	102			
Total	257	257	213	213.0	470			
Familiarity	**X**	**E**	**X**	**E**	**Total**	**Chi-Square**	**df**	**Cramer's V**
Copreneurs	153	135.8	96	113.2	249	9.8585**	1	0.1424
Others	112	129.2	125	107.8	237			
Total	265	265	221	221	486			

X=Observed value; E= Expected value, df= degrees of freedom
Significance levels: †<.10; *<.05; **<.01; ***<.001.

Appendix 12 Cross tabulation between different compositional variables distribution and 'Industry Experience'

	Industry Experience Homogeneous		Industry Experience Heterogeneous					
Start-up Experience	**X**	**E**	**X**	**E**	**Total**	**Chi-Square**	**df**	**Cramer's V**
Homogeneous	130	121.8	108	116.2	238	2.3042	1	0.0702
Heterogeneous	109	117.2	120	111.8	229			
Total	239	239	228	228	467			
Resource Heterogeneity	**X**	**E**	**X**	**E**	**Total**	**Chi-Square**	**df**	**Cramer's V**
0	2	2.0	2	2.0	4	10.8882	6	0.1525
1	8	6.0	4	6.0	12			
2	18	18.6	19	18.4	37			
3	42	33.1	24	32.9	66			
4	55	50.2	45	49.8	100			
5	66	72.8	79	72.2	145			
6	44	52.2	60	51.8	104			
Total	235	235	233	233.0	468			
Familiarity	**X**	**E**	**X**	**E**	**Total**	**Chi-Square**	**df**	**Cramer's V**
Copreneurs	117	125.3	130	121.7	247	2.2782	1	-0.0687
Others	128	119.7	108	116.3	236			
Total	245	245	238	238	483			

X=Observed value; E= Expected value, df= degrees of freedom
Significance levels: †<.10; *<.05; **<.01; ***<.001.

Appendix 13 Cross tabulation between different compositional variables distribution and 'Start-up Experience'

	Start-up Experience Homogeneous		Start-up Experience Heterogeneous					
Resource Heterogeneity	**X**	**E**	**X**	**E**	**Total**	**Chi-Square**	**df**	**Cramer's V**
0	2	2.1	2	1.9	4	8.5250	1	0.1360
1	8	6.2	4	5.8	12			
2	22	19.6	16	18.4	38			
3	43	34.6	24	32.4	67			
4	46	52.1	55	48.9	101			
5	72	73.3	70	68.7	142			
6	45	50.1	52	46.9	97			
Total	238	238	223	223	461			
Familiarity	**X**	**E**	**X**	**E**	**Total**	**Chi-Square**	**df**	**Cramer's V**
Copreneurs	149	125.6	99	122.4	248	18.4992***	1	0.1971
Others	92	115.4	136	112.6	228			
Total	241	241	235	235	476			

X=Observed value; E= Expected value, df= degrees of freedom
Significance levels: †<.10; *<.05; **<.01; ***<.001.

Appendix 14 Cross tabulation between 'Resource Heterogeneity' distribution and 'Familiarity'

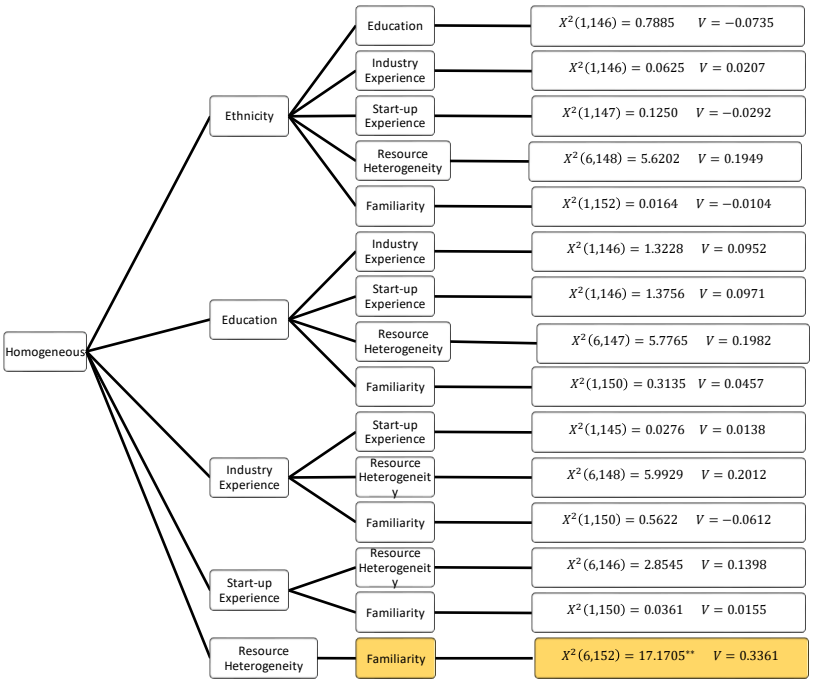
	Familiarity Copreneurs		Familiarity Others					
Resource Heterogeneity	**X**	**E**	**X**	**E**	**Total**	**Chi-Square**	**df**	**Cramer's V**
0	3	2.0	1	2.0	4	13.2912*	6	0.1666
1	6	6.0	6	6.0	12			
2	26	19.0	12	19.0	38			
3	35	33.9	33	34.1	68			
4	54	51.9	50	52.1	104			
5	75	72.8	71	73.2	146			
6	40	53.4	67	53.6	107			
Total	239	239	240	240	479			

X=Observed value; E= Expected value, df= degrees of freedom
Significance levels: †<.10; *<.05; **<.01; ***<.001.

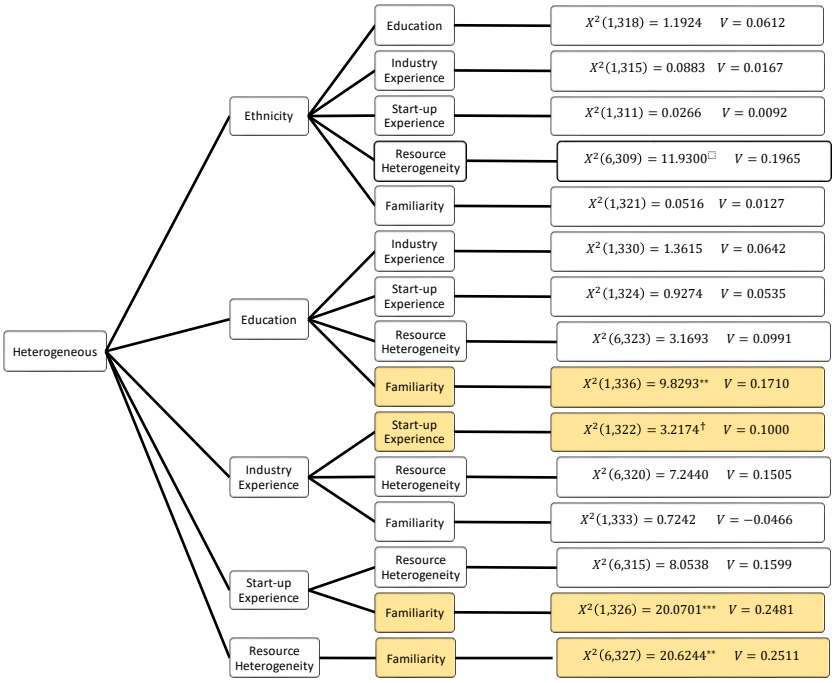
Conditional cross-tabulations.

The following diagrams succinctly reports degrees of freedom, sample size, Pearson Chi-square value, level of significance and, Cramér's V.

- ***By Gender***

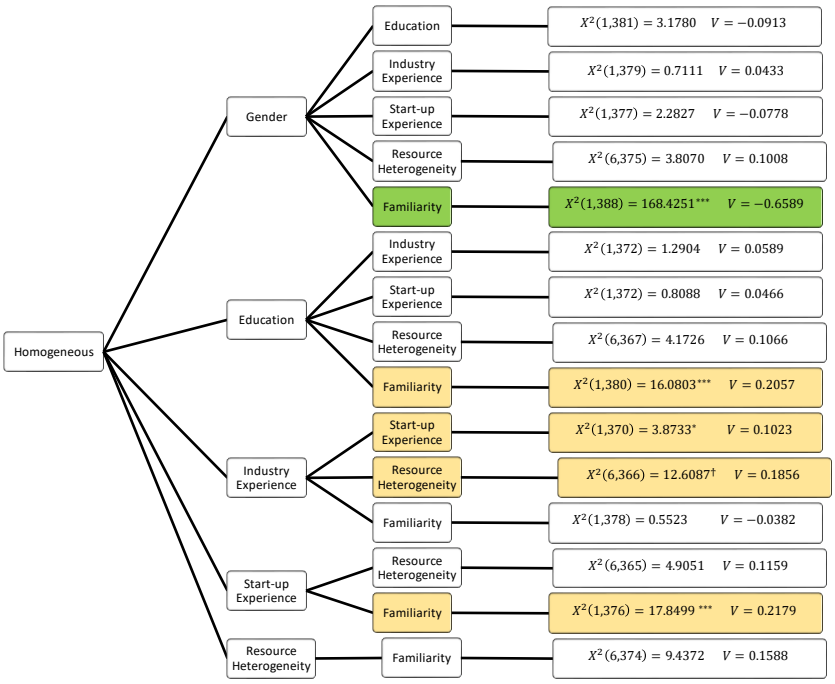


Appendix 15 Conditional cross-tabulation results according to Homogeneous-Gender NET

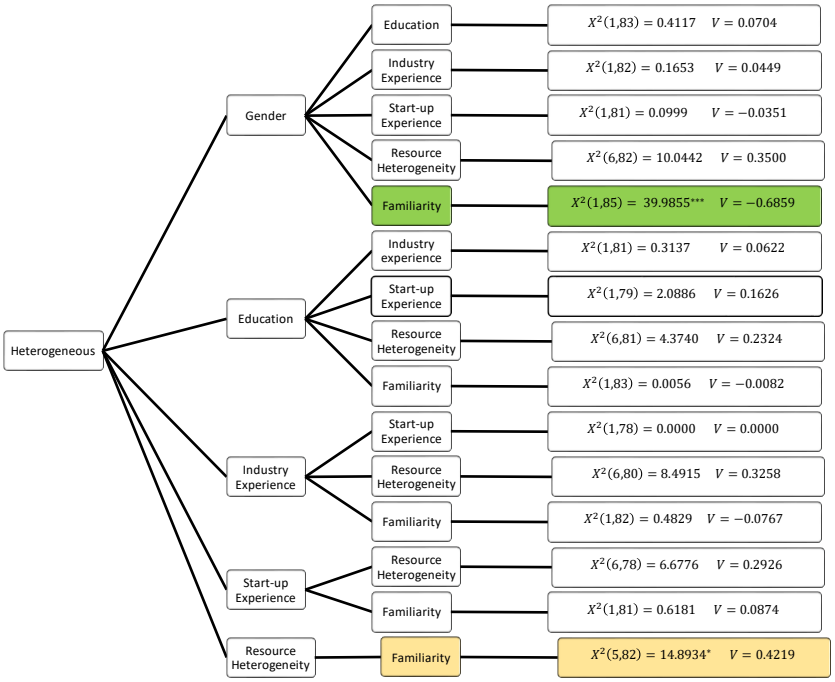


Appendix 16 Conditional cross-tabulation results according to Heterogeneous-Gender NET

- ***By Ethnicity***

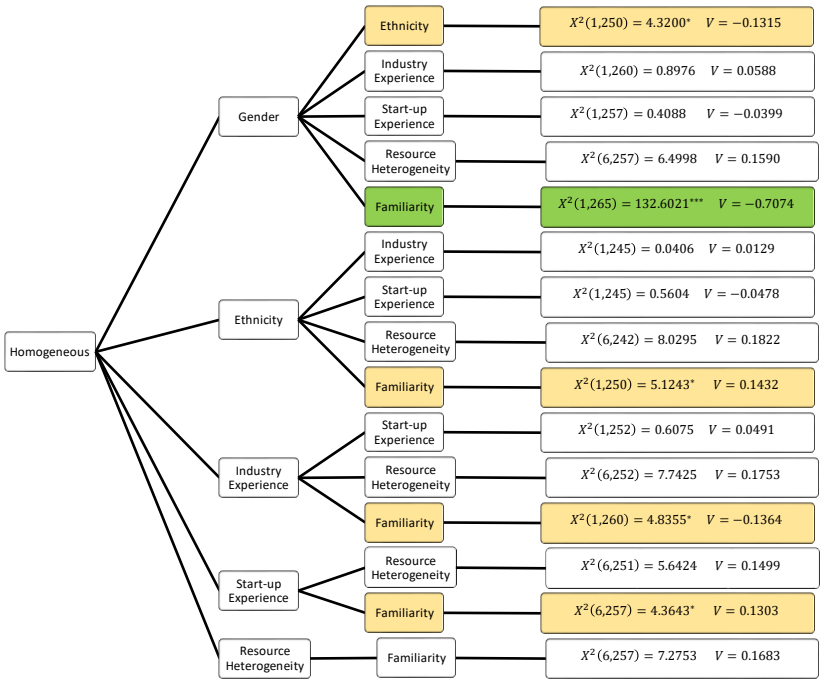


Appendix 17 Conditional cross-tabulation results according to White-Ethnic NET

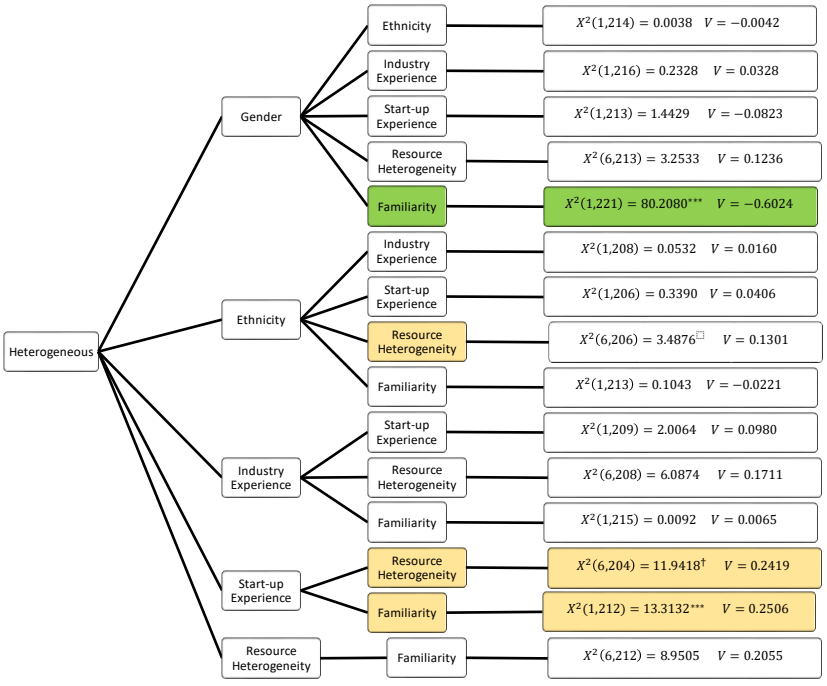


Appendix 18 Conditional cross-tabulation results according to Others-Ethnic NET

- ***By Education***

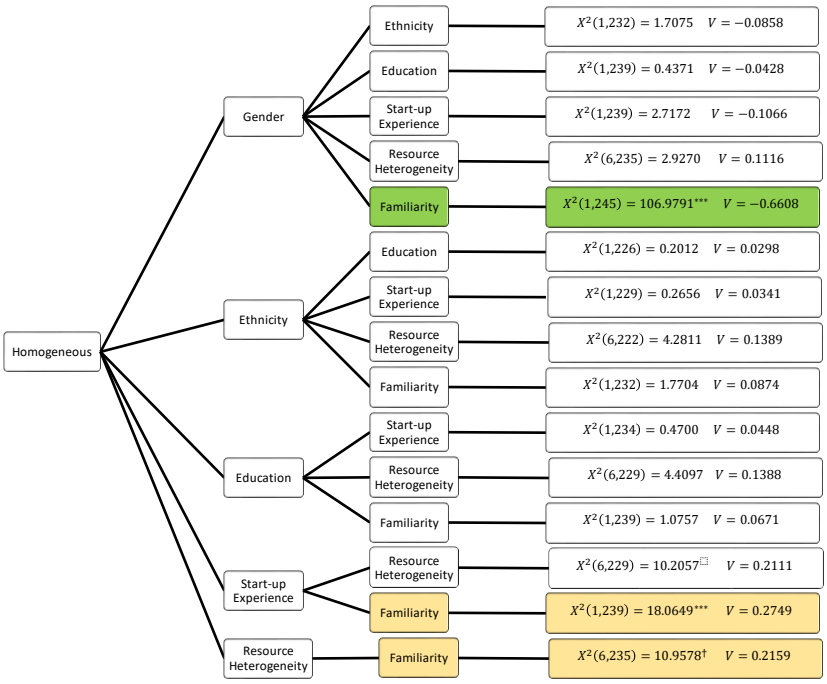


Appendix 19 Conditional cross-tabulation results according to Homogeneous-Education NET

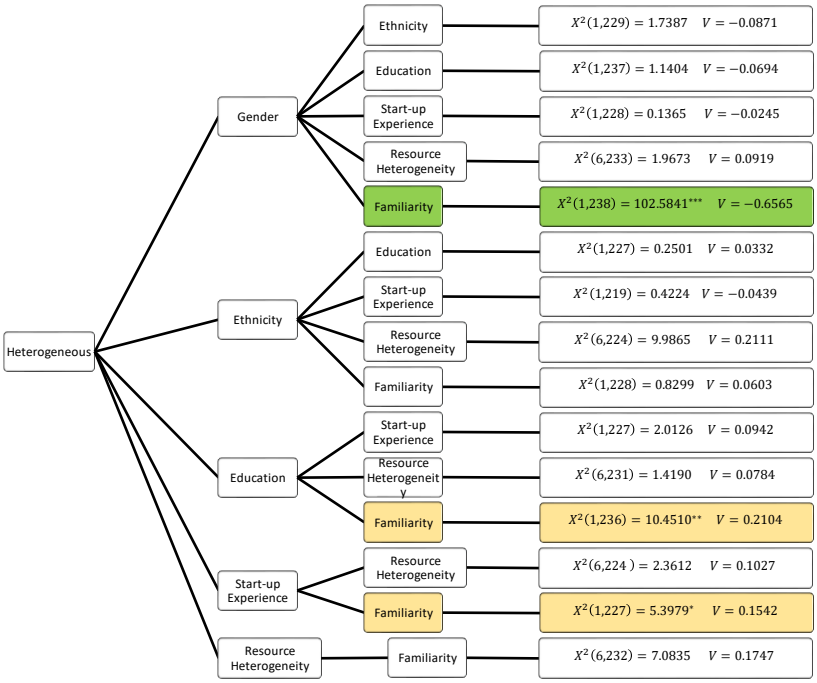


Appendix 20 Conditional cross-tabulation results according to Heterogeneous-Education NET

- ***By Industry experience***

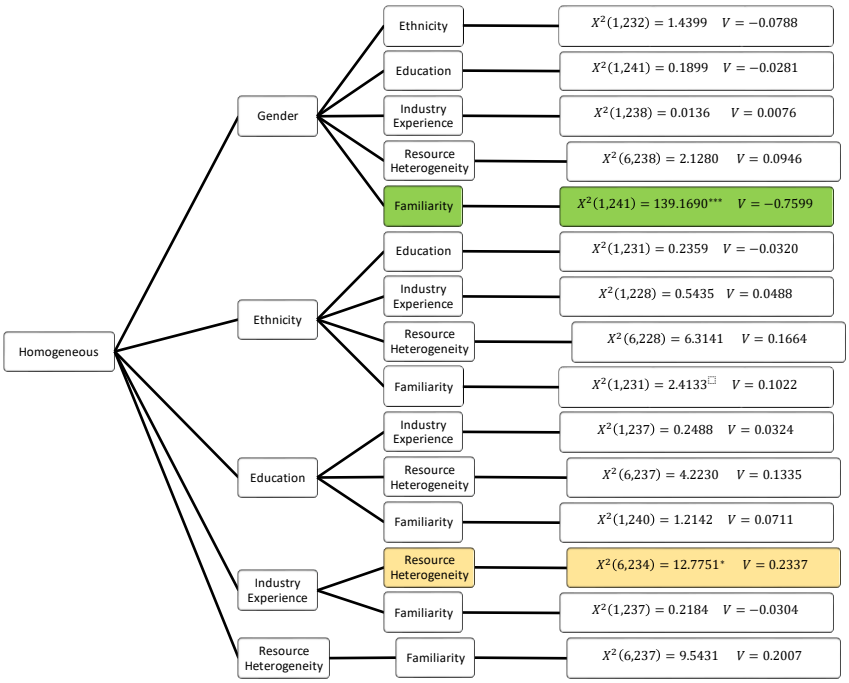


Appendix 21 Conditional cross-tabulation results according to Homogeneous-Industry experience NET

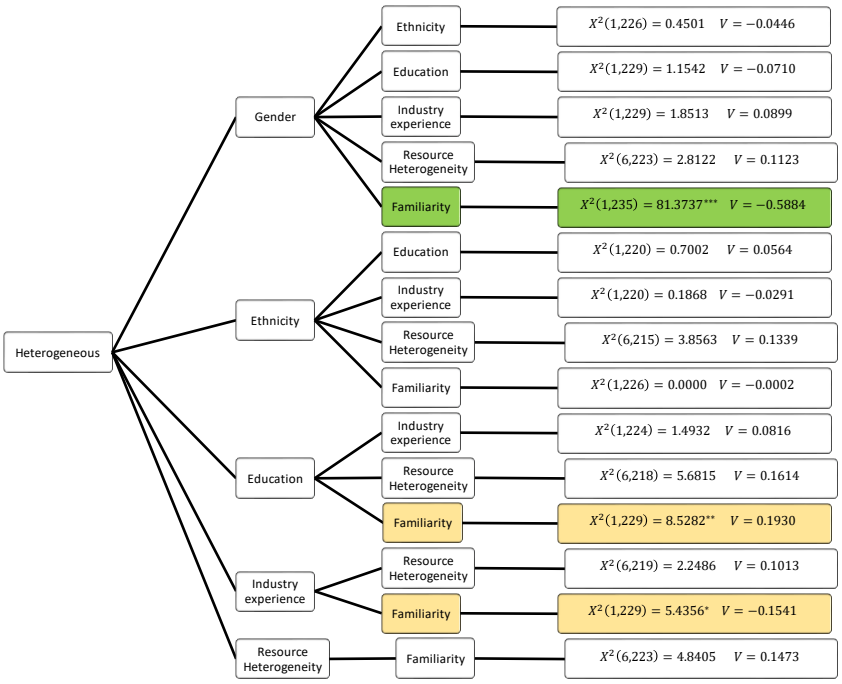


Appendix 22 Conditional cross-tabulation results according to Heterogeneous-Industry experience NET

- ***By Start-up experience***

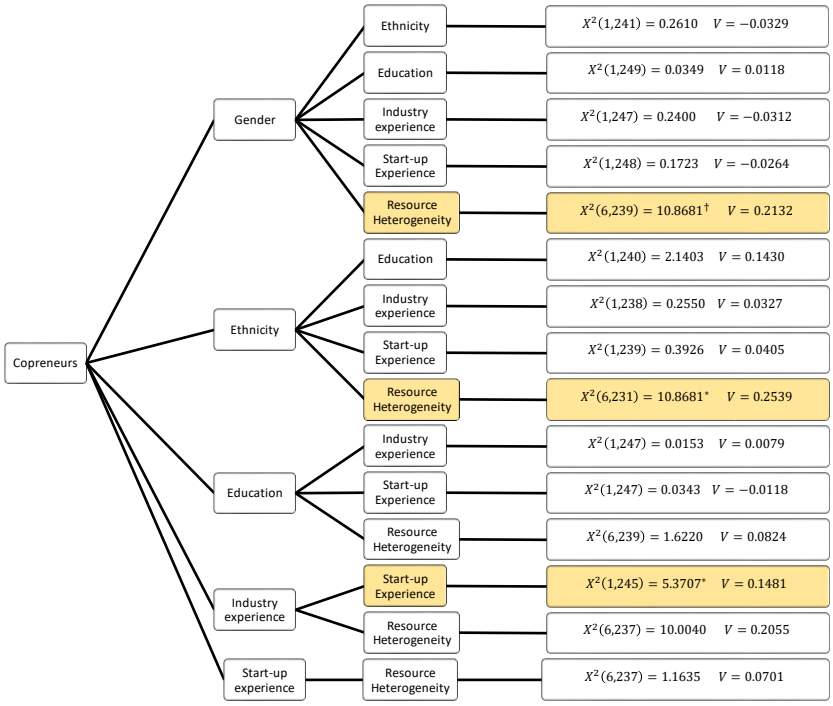


Appendix 23 Conditional cross-tabulation results according to Homogeneous-Start-up experience NET

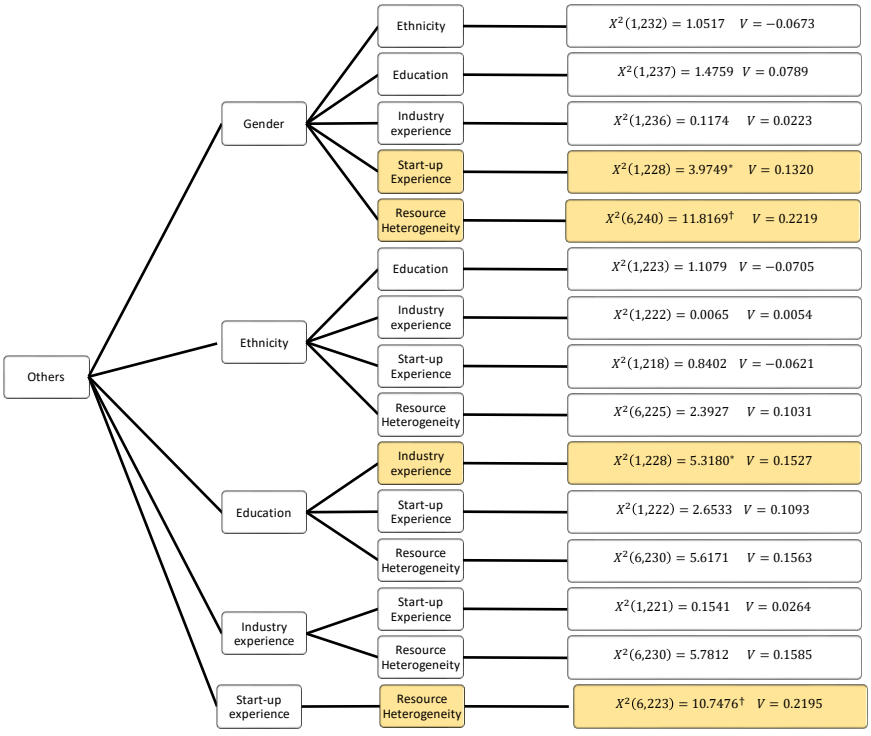


Appendix 24 Conditional cross-tabulation results according to Heterogeneous-Start-up experience NET

- ***By Familiarity***



Appendix 25 Conditional cross-tabulation results according to Copreneurs-Familiarity NET

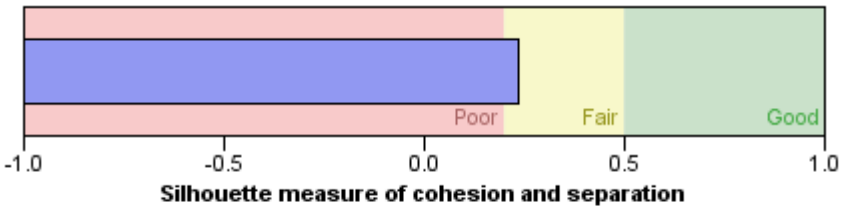


Appendix 26 Conditional cross-tabulation results according to Else-Familiarity NET

Appendix 27 Automatic clustering

Number of Clusters	Schwarz's Bayesian Criterion (BIC)	BIC Change[a]	Ratio of BIC Changes[b]	Ratio of Distance Measures[c]
1	5707.635			
2	5034.768	-672.866	1.000	2.788
3	4846.981	-187.787	.279	1.117
4	4687.623	-159.359	.237	1.575
5	4616.906	-70.717	.105	1.188
6	4570.597	-46.309	.069	1.122
7	4538.364	-32.233	.048	1.019
8	4508.239	-30.124	.045	1.030
9	4481.413	-26.827	.040	1.070
10	4461.767	-19.646	.029	1.090
11	4450.663	-11.104	.017	1.075
12	4446.172	-4.491	.007	1.026
13	4443.948	-2.224	.003	1.069
14	4447.265	3.317	-.005	1.009
15	4451.317	4.052	-.006	1.038

a. The changes are from the previous number of clusters in the table.
b. The ratios of changes are relative to the change for the two cluster solution.
c. The ratios of distance measures are based on the current number of clusters against the previous number of clusters.



Appendix 28 Cluster quality

Appendix 29 Clusters calculated by 13 predictors

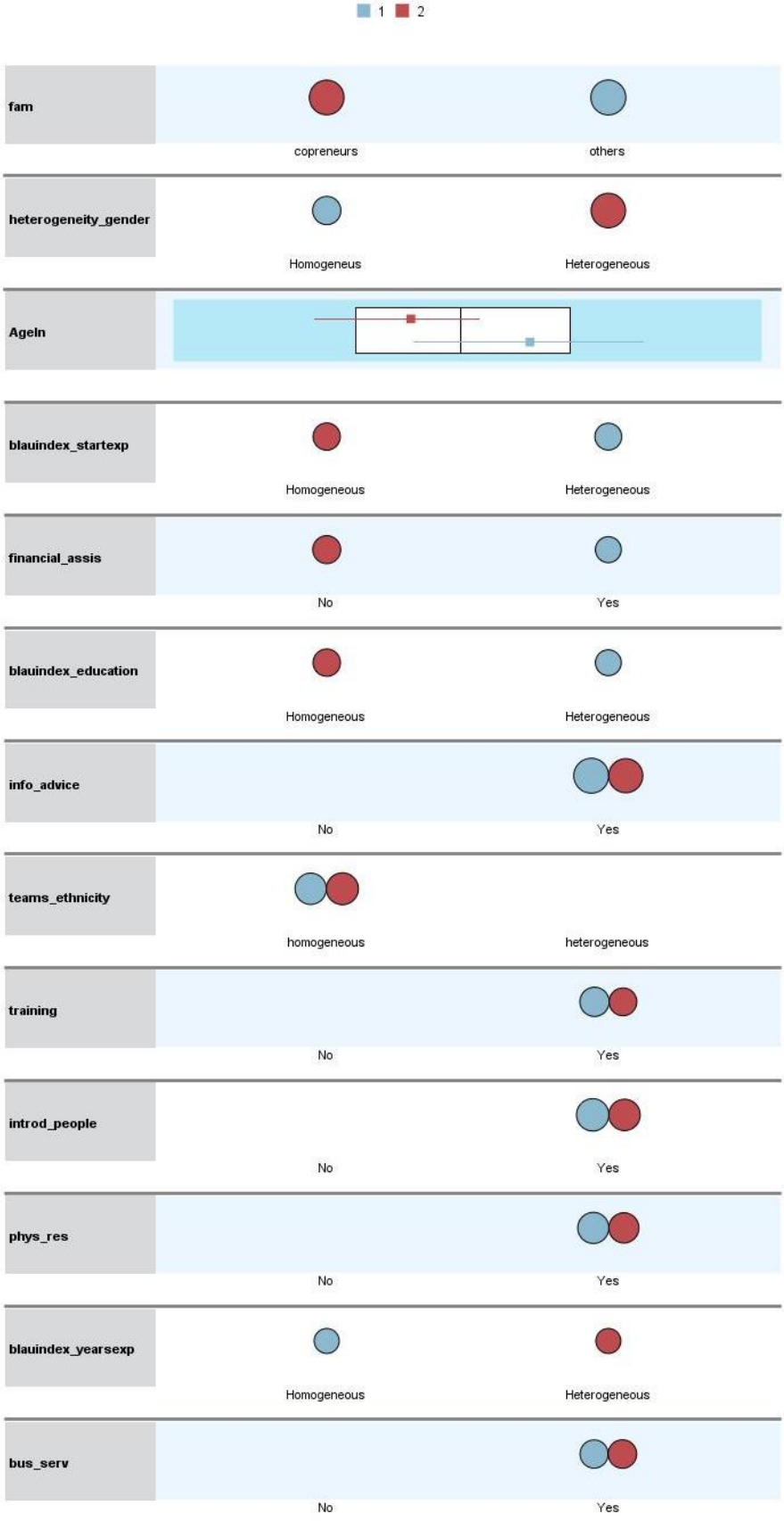
	Predictor importance		Cluster		X^2 *or* $t-test$
			1	*2*	
Size			50.5% (196)	49.5% (192)	
Familiarity	***1.00***	Copreneurs	0.5% (1)	99.5% (192)	**384.020*** **
		Others	100.0% (195)	0% (0)	
Gender	***0.47***	Homogeneous	(98.5%) (128)	1.5% (2)	**179.791*** **
		Heterogeneous	26.4% (68)	73.6% (190)	
Age (ln)	***0.19***	Mean	-2.0791	-2.8987	**8.639*** **
Start-up experience	***0.05***	Homogeneous	40.5% (81)	59.5% (119)	**16.564*** **
		Heterogeneous	61.2% (115)	38.8% (73)	
Access to financial resources (4)	***0.05***	Yes	61.5% (107)	38.5% (67)	**15.212*** **
		No	41.6% (89)	58.4% (125)	
Education	***0.04***	Homogeneous	42.6% (89)	57.4% (120)	**11.402** **
		Heterogeneous	59.8% (107)	59.8% (72)	
Information or advice to help with the business (2)	***0.02***	Yes	51.2% (195)	48.8% (186)	**3.743†**
		No	14.3% (1)	85.7% (6)	
Ethnicity	***0.01***	Homogeneous	48.9% (157)	51.1% (164)	**1.918**
		Heterogeneous	58.2% (39)	41.8% (28)	
Training in business (3)	***0.01***	Yes	52.7% (137)	47.3% (123)	**1.494**
		No	46.1% (59)	53.9% (69)	
Introduction to other people (1)	***0.01***	Yes	51.5% (167)	48.5% (157)	**0.830**
		No	45.3% (29)	54.7% (35)	

	Predictor importance		Cluster		X^2 *or* $t-test$
			1	*2*	
Physical resources (5)	***0.00***	Yes	51.7% (155)	48.3% (145)	**0.701**
		No	46.6% (41)	53.4% (47)	
Industry Experience	***0.00***	Homogeneous	52.1% (100)	49.0% (96)	**0.374**
		Heterogeneous	47.9% (92)	51.0% (100)	
Business assistance (legal, accounting) (6)	***0.00***	Yes	49.4% (127)	50.6% (130)	**0.368**
		No	52.7% (69)	47.3% (62)	

The predictors are organised by overall importance

Significance levels: *<.05; **<.01; ***<.001

Appendix 30 Cluster Comparison



Appendix 31 Pearson Correlation table of control, independent and dependent variables.

Study variables	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
1. Team Size	1									
2. Trading[1]	-0.0643	1								
3. Services[1]	0.1122*	-0.5748	1							
4. Opportunity[2]	0.1046*	-0.0315	0.0457	1						
5. Necessity[2]	-0.0334	0.0039	0.0298	-0.3222	1					
6. Average time spent in the business (ln)	-0.0335	-0.0513	0.0128	0.004	-0.0085	1				
7. Gender (=1)	-0.0139	0.0253	-0.0045	-0.0408	0.0105	0.0398	1			
8. CV age (ln)	0.2804***	-0.065	0.0994*	0.0258	0.0541†	-0.0931	-0.1499**	1		
9. Ethnicity (=1)	0.0415	0.019	0.0129	0.0123	-0.0254	0.0607	-0.0772†	-0.0303	1	
10. Education (=1)	0.2174***	-0.0157	-0.0126	-0.0489	0.113*	-0.0228	-0.055	0.0747	0.0194	1
11. Industry Experience (=1)	-0.0032	-0.0774†	0.0463	0.0254	-0.0082	-0.0023	0.0496	-0.0341	0.0144	0.0713
12. Start-up Experience (=1)	0.2177***	0.0031	-0.0266	0.0567	0.0251	-0.0671	-0.0686	0.2026***	0.0003	0.0703
13. Resource Heterogeneity	0.1723***	-0.0759†	0.0234	0.0068	-0.0229	0.3485***	0.0344	0.0814†	-0.0583	0.0503
14. Familiarity (=1)	0.4865***	-0.0829t	0.1112*	0.0913*	-0.0195	-0.0118	-0.649***	0.395***	0.0585	0.1424**
15. First Sale	-0.0731	-0.0902*	0.0185	-0.0006	-0.11*	0.3576***	0.0778	-0.0299	-0.0867†	-0.1238**
16. Time taken for the first sale	-0.0083	-0.1344*	0.091	0.1238*	0.0208	0.1309*	0.0458	0.004	0.0659	0.0354
17. Profitability type I	-0.0257	-0.1377*	0.0809	0.0709	-0.0113	0.0686	-0.0373	-0.0187	-0.0263	-0.0008
18. Time taken for profitability type I	-0.0391	-0.1079	0.0788	0.1475	-0.0218	0.1546*	0.0051	0.0053	0.1272t	-0.0078
19. Profitability type II	-0.0353	-0.1757**	0.0885	0.064	-0.1229†	0.0387	-0.0829	0.1901**	0.0348	0.051
20. Time taken for profitability type II	-0.0626	-0.2467*	0.1	0.2158*	-0.1836†	0.2332*	-0.0727	-0.1849†	0.1774†	-0.0034

(Continues)

Pearson Correlation table of control, independent and dependent variables. (Continues)

Study variables	11	12	13	14	15	16	17	18	19	20
11. Industry Experience	1									
12. Start-up Experience	0.0702	1								
13. Resource Heterogeneity	0.1141*	0.0937*	1							
14. Familiarity	-0.0687	0.1971***	0.1328**	1						
15. First Sale	0.0622	0.0075	0.2927***	-0.0854t	1					
16. Time taken for the first sale	0.0255	0.0336	0.0452	-0.0164	.	1				
17. Profitability type I	-0.0042	-0.0333	0.0172	-0.0279	.	0.0657	1			
18. Time taken for profitability type I	-0.0026	0.0663	-0.0257	-0.0369	.	0.88***	.	1		
19. Profitability type II	0.0044	0.0192	-0.0121	0.1585*	.	0.04	.	0.0614	1	
20. Time taken for profitability type II	0.0932	-0.008	-0.0699	0.0422	.	0.7569***	.	0.8185***	.	1

Significance levels: † <0.10; *<.05; **<.01; ***<.001
Gender (=1) refers to heterogeneous teams.
Ethnicity (=1) refers to ethnically heterogeneous teams.
The three HC variables (=1) refer to heterogeneous teams
Familiarity (=1) refers to more distantly related
1 The reference category represents manufacturing
2 The reference category represents those entrepreneurs which motivation to start a business come from both, the business decision and business idea.

Appendix 32 VIF scores for 'First Sales'

Time to make the first sale (Months)	Model 1a VIF	Model 2a VIF	Model 3a VIF	Model 4a VIF	Model 5a VIF	Model 6a VIF	Model 7a VIF	Model 8a VIF	Model 9a VIF	Model 10a VIF
Controls										
Team Size	1.03	1.11	1.03	1.12	1.07	1.03	1.07	1.10	1.07	1.31
Trading[1]	1.39	1.44	1.40	1.45	1.41	1.41	1.40	1.42	1.40	1.40
Service[1]	1.41	1.45	1.42	1.45	1.43	1.41	1.42	1.43	1.40	1.41
Opportunity[2]	1.11	1.12	1.10	1.11	1.11	1.11	1.11	1.10	1.11	1.11
Necessity[2]	1.10	1.12	1.10	1.11	1.12	1.10	1.11	1.11	1.09	1.10
Mean work hours (ln)	1.02	1.02	1.01	1.03	1.01	1.02	1.03	1.03	1.06	1.02
Independent variables										
Gender (=1)	1.01			1.07						
Age diversity		1.11		1.17						
Ethnicity (=1)			1.02	1.03						
Education (=1)					1.06			1.06		
Industry Experience (=1)						1.02		1.03		
Start-up Experience (=1)							1.07	1.07		
Resource Heterogeneity									1.11	
Familiarity (=1)										1.30

Gender (=1) refers to heterogeneous teams.
Ethnicity (=1) refers to ethnically heterogeneous teams.
The three HC variables (=1) refer to heterogeneous teams
Familiarity (=1) refers to more distantly related
[1] The reference category represents manufacturing
[2] The reference category represents those entrepreneurs which motivation to start a business come from both, the business decision and business idea.

Appendix 33 The effect of Demographic Diversity NETs profitability using Logistic Regression (Type I)

Profitability type I	**Model 11**		**Model 12**		**Model 13**		**Model 14**	
	Z-score (*SE*)	**O.R.**	**Z-score (*SE*)**	**O.R.**	**Z-score (*SE*)**	**O.R.**	**Z-score (*SE*)**	**O.R.**
Controls								
Team Size	-0.73	0.876	-0.41	0.924	-0.20	0.962	0.20	1.041
	(0.180)		(0.192)		(0.191)		(0.202)	
Trading[1]	-1.70†	0.556	-1.59	0.564	-1.57	0.580	-1.50	0.581
	(0.346)		(0.361)		(0.348)		(0.363)	
Service[1]	0.09	1.027	0.05	1.016	0.53	1.169	0.39	1.129
	(0.291)		(0.309)		(0.296)		(0.315)	
Opportunity[2]	1.43	1.454	1.58	1.538	1.50	1.493	1.64	1.580
	(0.262)		(0.273)		(0.267)		(0.279)	
Necessity[2]	0.08	1.033	0.16	1.068	0.43	1.194	0.59	1.291
	(0.391)		(0.413)		(0.412)		(0.435)	
Mean work hours (ln)	1.51	1.127	1.39	1.122	1.41	1.122	1.37	1.126
	(0.079)		(0.083)		(0.082)		(0.086)	
Independent variables								
Gender (=1)	-0.36	0.907					-0.81	0.791
	(0.269)						(0.290)	
Age diversity (ln)			-0.70	0.912			-0.7	0.908
			(0.132)				(0.138)	
Ethnicity (=1)					-0.69	0.796	-0.81	0.755
					(0.332)		(0.347)	
_const	0.42	1.331	-0.21	0.850	-0.02	0.986	-0.38	0.730
	(0.679)		(0.787)		(0.680)		(0.832)	
Team Observations	319		288		307		279	
Pseudo R	0.0230		0.0246		0.0249		0.0245	
LR Chi2 (df)	9.38(7)		9.16(7)		9.76(7)		10.46(9)	

Significance levels: †>.10; *>.05; **>.01; ***>.001

Gender (=1) refers to heterogeneous teams.

Ethnicity (=1) refers to ethnically heterogeneous teams.

Appendix 34 The effect of Human Capital on NETs profitability using Logistic Regression (Type I)

	Model 15		Model 16		Model 17		Model 18	
Profitability Type I	**Z-score (*SE*)**	**O.R.**	**Z-score (*SE*)**	**O.R.**	**Z-score (*SE*)**	**O.R.**	**Z-score (*SE*)**	**O.R.**
Controls								
Team Size	-0.89	0.844	-0.90	0.848	-0.77	0.861	-1.01	0.816
	(0.190)		(0.183)		(0.194)		(0.202)	
Trading[1]	-1.85†	0.522	-1.68†	0.558	-1.88†	0.516	-1.98*	0.493
	(0.352)		(0.347)		(0.352)		(0.358)	
Service[1]	-0.09	0.983	0.17	1.051	0.12	1.036	-0.04	0.989
	(0.297)		(0.292)		(0.301)		(0.305)	
Opportunity[2]	1.30	1.407	1.51	1.485	1.46	1.480	1.40	1.460
	(0.264)		(0.262)		(0.269)		(0.270)	
Necessity[2]	-0.05	0.978	0.25	1.107	0.68	1.333	0.51	1.245
	(0.399)		(0.402)		(0.423)		(0.431)	
Mean work hours (ln)	1.40	1.119	1.41	1.119	1.66†	1.147	1.45	1.127
	(0.080)		(0.080)		(0.082)		(0.083)	
Independent variables								
Education (=1)	0.17	1.043					0.30	1.083
	(0.255)						(0.264)	
Industry Experience (=1)			-0.24	0.943			-0.19	0.953
			(0.244)				(0.254)	
Start-up Experience (=1)					-0.39	0.905	-0.32	0.921
					(0.256)		(0.258)	
_const	0.57	1.461	0.49	1.395	0.34	1.262	0.65	1.595
	(0.664)		(0.674)		(0.681)		(0.714)	
Team Observations	312		315		307		300	
Pseudo R2	0.0233		0.0232		0.0291		0.0286	
LR Chi2 (df)	9.31(7)		9.37(7)		11.34(7)		10.94(9)	

Significance levels: †>.10; *>.05; **>.01; ***>.001.

The three HC variables (=1) refer to heterogeneous teams

[1] The reference category represents manufacturing

[2] The reference category represents those entrepreneurs which motivation to start a business come from both, the business decision and business idea.

Appendix 35 The effect of Resource Heterogeneity and Familiarity on NETs profitability using Logistic Regression (Type I)

	Model 19		**Model 20**	
Profitability Type I	**Z-score (*SE*)**	**O.R.**	**Z-score (*SE*)**	**O.R.**
Controls				
Team Size	-0.86	0.852	-0.38	
	(0.186)		(0.204)	0.925
Trading[1]	-1.68†	0.552	-1.75†	
	(0.353)		(0.346)	0.546
Service[1]	0.18	1.056	0.12	
	(0.297)		(0.291)	1.035
Opportunity[2]	1.60	1.534	1.42	
	(0.267)		(0.262)	1.451
Necessity[2]	0.03	1.013	0.08	
	(0.405)		(0.391)	1.030
Mean work hours (ln)	1.64†	1.148	1.54	
	(0.084)		(0.079)	1.130
Independent variables				
Resource Heterogeneity	-0.20	0.979		
	(0.105)		-0.57	
			(0.275)	0.845
Familiarity (=1)				
_const	0.36	1.301	0.23	
	(0.728)		(0.660)	1.165
Team Observations	309		319	
Pseudo R2	0.0268		0.0234	
LR Chi2 (df)	10.56(7)		9.57(7)	

Significance levels: †>.10; *>.05; **>.01; ***>.001.

[1] The reference category represents manufacturing

[2] The reference category represents those entrepreneurs which motivation to start a business come from both, the business decision and business idea.

Familiarity (=1) refers to more distant-related

Appendix 36 The effect of Demographic Diversity on NETs profitability using Logistic Regression (Type II)

Profitability Type II	**Model 21**		**Model 22**		**Model 23**		**Model 24**	
	Z-score (*SE*)	**O.R.**	**Z-score (*SE*)**	**O.R.**	**Z-score (*SE*)**	**O.R.**	**Z-score (*SE*)**	**O.R.**
Controls								
Team Size	-0.83 (0.222)	0.832	-1.66† (0.243)	0.668	-1.05 (0.228)	0.788	-1.70† (0.246)	0.658
Trading[1]	-2.09* (0.446)	0.394	-1.40 (0.475)	0.514	-2.01* (0.451)	0.404	-1.42 (0.483)	0.504
Service[1]	0.25 (0.338)	1.089	0.79 (0.371)	1.340	0.34 (0.347)	1.124	0.69 (0.380)	1.298
Opportunity[2]	0.73 (0.309)	1.254	0.31 (0.333)	1.108	1.04 (0.314)	1.387	0.52 (0.340)	1.194
Necessity[2]	-1.05 (.483)	0.603	-2.13* (0.565)	0.300	-1.09 (0.495)	0.583	-2.02* (0.569)	0.317
Mean work hours (ln)	0.29 (0.092)	1.027	0.79 (0.100)	1.082	0.03 (0.094)	1.003	-0.46 (0.103)	1.048
Independent variables								
Gender (=1)	-0.99 (0.320)	0.728					-0.24 (0.354)	0.918
Age diversity (ln)			**3.02** (0.166)**	**1.651**			2.94** (0.174)	1.666
Ethnicity (=1)					0.20 (0.411)	1.086	0.40 (0.439)	1.192
_const	1.06 (0.838)	2.430	2.00 (1.021)	7.708	1.04 (0.818)	2.337	2.17* (1.066)	10.154
Team Observations	211		188		204		184	
Pseudo R	0.0405		0.0822		0.0420		0.0880	
LR Chi2 (df)	11.62 (7)		21.14**(7)		11.66(7)		22.13** (9)	

Significance levels: †>.10; *>.05; **>.01; ***>.001

[1] The reference category represents manufacturing

[2] The reference category represents those entrepreneurs which motivation to start a business come from both, the business decision and business idea.

Gender (=1) refers to heterogeneous teams.

Ethnicity (=1) refers to ethnically heterogeneous teams.

Appendix 37 The effect of Human Capital on NETs profitability using Logistic Regression (Type II)

	Model 25		Model 26		Model 27		Model 28	
Profitability Type II	**Z-score (*SE*)**	**O.R.**	**Z-score (*SE*)**	**O.R.**	**Z-score (*SE*)**	**O.R.**	**Z-score (*SE*)**	**O.R.**
Controls								
Team Size	-1.35 (0.250)	0.714	-0.94 (0.228)	0.807	-1.48 (0.249)	0.692	-1.78† (0.276)	0.612
Trading[1]	-2.45* (0.464)	0.320	-2.09* (0.445)	0.395	-2.05* (0.446)	0.400	-2.51* (0.469)	0.309
Service[1]	0.31 (0.345)	1.114	0.38 (0.341)	1.139	0.29 (0.341)	1.105	0.25 (0.348)	1.091
Opportunity[2]	0.89 (0.314)	1.321	0.82 (0.311)	1.288	0.57 (0.314)	1.194	0.73 (0.320)	1.264
Necessity[2]	-0.91 (0.497)	0.638	-0.79 (0.489)	0.679	-1.05 (0.482)	0.601	-0.63 (0.506)	0.727
Mean work hours (ln)	0.33 (0.092)	1.031	0.38 (0.092)	1.036	0.46 (0.093)	1.043	0.57 (0.094)	1.055
Independent variables								
Education (=1)	1.42 (0.326)	1.589					1.46 (0.333)	1.628
Industry Experience (=1)			-0.35 (0.291)	0.902			-0.41 (0.300)	0.885
Start-up Experience (=1)					0.74 (0.308)	1.256	1.02 (0.314)	1.377
_const	0.95 (0.823)	2.194	0.82 (0.829)	1.973	1.02 (0.823)	2.316	1.00 (0.880)	2.405
Team Observations	206		208		206		200	
Pseudo R2	0.0483		0.0368		0.0400		0.0521	
LR Chi2 (df)	13.52†(7)		10.39(7)		11.26 (7)		14.21 (9)	

Significance levels: †>.10; *>.05; **>.01; ***>.001.

[1] The reference category represents manufacturing

[2] The reference category represents those entrepreneurs which motivation to start a business come from both, the business decision and business idea.

The three HC variables (=1) refer to heterogeneous teams

Appendix 38 The effect of Resource Heterogeneity and Familiarity on NETs profitability using Logistic Regression (Type II)

	Model 29		**Model 30**	
Profitability Type II	**Z-score (*SE*)**	**O.R.**	**Z-score (*SE*)**	**O.R.**
Controls				
Team Size	-0.75		-1.99*	
	(0.227)	0.843	(0.260)	0.596
Trading[1]	-2.00*		-2.00*	
	(0.447)	0.409	(0.453)	0.405
Service[1]	0.40		0.31	
	(0.341)	1.145	(0.343)	1.112
Opportunity[2]	0.68		0.54	
	(0.311)	1.235	(0.313)	1.185
Necessity[2]	-0.73		-1.07	
	(0.495)	0.695	(0.495)	0.589
Mean work hours (ln)	0.26		0.17	
	(0.097)	1.026	(0.093)	1.016
Independent variables				
Resource Heterogeneity	-0.05			
	(0.125)	0.993		
Familiarity (=1)			2.59**	
			(0.346)	2.447
_const	0.72		1.34	
	(0.893)	1.904	(0.830)	3.029
Team Observations	206		211	
Pseudo R2	0.0324(7)		0.0615	
LR Chi2 (df)	9.04(7)		17.64*(7)	

Significance levels: †>.10; *>.05; **>.01; ***>.001.

[1] The reference category represents manufacturing

[2] The reference category represents those entrepreneurs which motivation to start a business come from both, the business decision and business idea. Familiarity (=1) refers to more distant-related

Appendix 39 VIF scores for 'Profitability Type I'

Time to make the first sale (Weeks)	Model 11a VIF	Model 12a VIF	Model 13a VIF	Model 14a VIF	Model 15a VIF	Model 16a VIF	Model 17a VIF	Model 18a VIF	Model 19a VIF	Model 20a VIF
Controls										
Team Size	1.03	1.09	1.04	1.11	1.13	1.04	1.12	1.22	1.08	1.30
Trading[1]	1.33	1.37	1.35	1.40	1.36	1.33	1.32	1.36	1.32	1.34
Service[1]	1.37	1.41	1.40	1.44	1.38	1.38	1.37	1.37	1.38	1.37
Opportunity[2]	1.13	1.14	1.13	1.15	1.12	1.14	1.15	1.14	1.14	1.14
Necessity[2]	1.12	1.15	1.12	1.16	1.13	1.12	1.12	1.13	1.11	1.12
Mean work hours (ln)	1.03	1.04	1.02	1.05	1.02	1.02	1.02	1.03	1.08	1.03
Independent variables										
Gender (=1)	1.02			1.10						
Age diversity		1.08		1.15						
Ethnicity (=1)			1.02	1.02						
Education (=1)					1.14			1.14		
Industry Experience (=1)						1.02		1.02		
Start-up Experience (=1)							1.12	1.10		
Resource Heterogeneity									1.11	
Familiarity (=1)										1.31

[1] The reference category represents manufacturing

[2] The reference category represents those entrepreneurs which motivation to start a business come from both, the business decision and business idea.

Gender (=1) refers to heterogeneous teams.

Ethnicity (=1) refers to ethnically heterogeneous teams.

The three HC variables (=1) refer to heterogeneous teams

Familiarity (=1) refers to more distantly related

Appendix 40 The effect of Demographic Diversity on the time taken to achieve Profitability Type I using Multiple Linear Regression

	Model 11a			Model 12a			Model 13a			Model 14a		
Profitability Type I (ln months)	**t-value (*SE*)**	**(β)**	**Robust SE**	**t-value (*SE*)**	**(β)**	**Robust SE**	**t-value (*b*)**	**(β)**	**Robust SE**	**t-value (*b*)**	**(β)**	**Robust SE**
Controls												
Team Size	-1.03	-0.073	0.090	-0.95	-0.072	0.098	-1.03	-0.074	0.088	-1.00	-0.078	0.101
	(0.130)			(0.137)			(0.130)			(0.136)		
Trading[1]	-1.04	-0.083	0.269	-0.79	-0.068	0.281	-0.94	-0.077	0.271	-0.77	-0.067	0.278
	(0.262)			(0.272)			(0.258)			(0.270)		
Service[1]	0.58	0.047	0.215	0.88	0.076	0.231	0.31	0.026	0.213	0.71	0.062	0.225
	(0.198)			(0.212)			(0.198)			(0.212)		
Opportunity[2]	2.03*	0.150	0.181*	2.53*	0.197	0.188*	2.13*	0.159	0.179*	2.52*	0.200	0.188*
	(0.182)			(0.191)			(0.180)			(0.191)		
Necessity[2]	0.23	0.017	0.347	0.40	0.031	0.367	0.06	0.005	0.334	0.54	0.043	0.369
	(0.286)			(0.310)			(0.284)			(0.306)		
Mean work hours (ln)	2.27*	0.160	0.054*	2.39*	0.177	0.056*	2.16*	0.154	0.053*	2.35*	0.178	0.054*
	(0.054)			(0.057)			(0.054)			(0.057)		
Independent variables												
Gender (=1)	0.49	0.034	0.191							0.37	0.029	0.189
	(0.186)									(0.196)		
Age diversity (ln)				-0.03	-0.002	0.103				0.38	0.030	0.102
				(0.090)						(0.092)		
Ethnicity (=1)							**1.67†**	0.119	**0.225†**	1.49	0.111	0.235
							(0.230)			(0.240)		
_const	4.55***		0.458***	3.61***		0.558***	4.82***		0.426***	3.59***		0.557***
	(0.490)			(0.566)			(0.471)			(0.571)		
Obs.	201		201	179		179	194		194	175		175
R-squared	0.0653		0.0653	0.0903		0.0903	0.0791		0.0791	0.1028		0.1028
Adjusted R-squared	0.0314			0.0531			0.0444			0.0538		
F (df)	1.92†(7)		2.15*(7)	2.43*(7)		2.76**	2.28*(7)		2.40*(7)	2.10*(9)		2.35*(9)

Significance levels: †>.10; *>.05; **>.01; ***>.001

[1] The reference category represents manufacturing

[2] The reference category represents those entrepreneurs which motivation to start a business come from both, the business decision and business idea.

Gender (=1) refers to heterogeneous teams.

Ethnicity (=1) refers to ethnically heterogeneous teams.

Appendix 41 The effect of Human Capital on the time taken to achieve Profitability Type I using Multiple Linear Regression

	Model 15a			Model 16a			Model 17a			Model 18a		
Profitability Type I (ln months)	**t-value (*SE*)**	**(β)**	**Robust SE**	**t-value (*SE*)**	**(β)**	**Robust SE**	**t-value (*b*)**	**(β)**	**Robust SE**	**t-value (*b*)**	**(β)**	**Robust SE**
Controls												
Team Size	-1.28 (0.145)	-0.096	0.106	-1.13 (0.134)	-0.081	0.093	-1.30† (0.144)	-0.096	0.100†	-1.43 (0.158)	-0.113	0.121†
Trading[1]	-0.92 (0.268)	-0.076	0.281	-0.98 (0.264)	-0.079	0.268	-0.94 (0.262)	-0.076	0.270	-0.92 (0.269)	-0.076	0.280
Service[1]	0.68 (0.202)	0.056	0.219	0.67 (0.201)	0.055	0.220	0.67 (0.201)	0.055	0.217	0.73 (0.204)	0.061	0.221
Opportunity[2]	1.99* (0.184)	0.148	0.183*	2.04 (0.184)	0.152	0.183*	2.05* (0.185)	0.154	0.185*	1.93* (0.189)	0.146	0.189†
Necessity[2]	0.10 (0.295)	0.007	0.356	0.27 (0.287)	0.020	0.345	0.26 (0.286)	0.019	0.342	0.11 (0.297)	0.009	0.354
Mean work hours (ln)	2.19* (0.054)	0.156	0.055*	2.16* (0.054)	0.153	0.055*	2.32* (0.055)	0.165	0.054*	2.26* (0.055)	0.163	0.055*
Independent variables												
Education (=1)	0.33 (0.185)	0.025	0.193							0.21 (0.189)	0.016	0.198
Industry (=1)				-0.39 (0.172)	-0.028	0.173				-0.39 (0.176)	-0.028	0.176
Experience Start-up Experience (=1)							1.12 (0.180)	0.083	0.184	1.03 (0.183)	0.077	0.186
_const	4.88*** (0.487)		0.452***	4.83*** (0.493)		0.453***	4.65*** (0.487)		0.442***	4.57*** (0.520)		0.478***
Obs.	197		197	199		199	196		196	192		192
R-squared	0.0658		0.0658	0.0621		0.0654	0.0753		0.0753	0.0755		0.0755
Adjusted R-squared	0.0312			0.0311			0.0409			0.0297		
F	1.90† (7)		2.22*(7)	1.91† (7)		2.16*(7)	2.19*(7)		2.53*(7)	1.65(9)		1.95*(9)

Significance levels: †>.10; *>.05; **>.01; ***>.001.

[1] The reference category represents manufacturing

[2] The reference category represents those entrepreneurs which motivation to start a business come from both, the business decision and business idea.

The three HC variables (=1) refer to heterogeneous teams

Appendix 42 The effect of Resource Heterogeneity and Familiarity on the time taken to achieve Profitability Type I using Multiple Linear Regression

	Model 19a			Model 20a		
Profitability Type I (ln months)	**t-value (*SE*)**	**(β)**	**Robust SE**	**t-value (*SE*)**	**(β)**	**Robust SE**
Controls						
Team Size	-0.91 (0.133)	-0.066	0.091	-0.58 (0.147)	-0.046	0.106
Trading[1]	-1.20 (0.264)	-0.096	0.276	-1.07 (0.263)	-0.086	0.271
Service[1]	0.62 (0.200)	0.051	0.215	0.56 (0.198)	0.046	0.215
Opportunity[2]	1.79† (0.182)	0.134	0.179†	2.08* (0.182)	0.154	0.180*
Necessity[2]	-0.03 (0.290)	0.002	0.358	0.24 (0.285)	0.018	0.347
Mean work hours (ln)	2.51* (0.056)	0.182	0.055*	2.29* (0.054)	0.161	0.054*
Independent variables						
Resource Heterogeneity	-0.75 (0.073)	-0.055	0.076			
Familiarity (=1)				-0.70 (0.194)	-0.056	0.200
_const	4.72*** (0.517)		0.477***	4.67*** (0.479)		0.444***
Obs.	198		198	201		201
R-squared	0.0720		0.0720	0.0665		0.0665
Adjusted R-squared	0.0379			0.0326		
F	2.11*(7)		2.34*(7)	1.96†(7)		2.15*(7)

Significance levels: †>.10; *>.05; **>.01; ***>.001.

[1] The reference category represents manufacturing

[2] The reference category represents those entrepreneurs which motivation to start a business come from both, the business decision and business idea.

The three HC variables (=1) refers to heterogeneous teams

Familiarity (=1) refers to more distant-related

Appendix 43 VIF scores for 'Profitability Type II'

Time to make the first sale (Weeks)	Model 21a VIF	Model 22a VIF	Model 23a VIF	Model 24a VIF	Model 25a VIF	Model 26a VIF	Model 27a VIF	Model 28a VIF	Model 29a VIF	Model 30a VIF
Controls										
Team Size	1.12	1.15	1.10	1.37	1.17	1.15	1.21	1.39	1.13	1.27
Trading[1]	1.20	1.25	1.21	1.28	1.24	1.20	1.20	1.24	1.21	1.20
Service[1]	1.28	1.30	1.30	1.34	1.28	1.29	1.29	1.30	1.32	1.29
Opportunity[2]	1.23	1.23	1.25	1.25	1.25	1.25	1.23	1.24	1.25	1.24
Necessity[2]	1.12	1.13	1.12	1.18	1.12	1.13	1.13	1.14	1.13	1.11
Mean work hours (ln)	1.04	1.08	1.05	1.10	1.05	1.04	1.11	1.12	1.16	1.04
Independent variables										
Gender (=1)	1.07			1.34						
Age diversity		1.09		1.28						
Ethnicity (=1)			1.08	1.09						
Education (=1)					1.13			1.16		
Industry Experience (=1)						1.07		1.26		
Start-up experience (=1)							1.27	1.09		
Resource Heterogeneity									1.18	
Familiarity (=1)										1.24

[1] The reference category represents manufacturing

[2] The reference category represents those entrepreneurs which motivation to start a business come from both, the business decision and business idea.

Gender (=1) refers to heterogeneous teams.

Ethnicity (=1) refers to ethnically heterogeneous teams.

The three HC variables (=1) refer to heterogeneous teams

Familiarity (=1) refers to more distantly related

Appendix 44 The effect of Demographic Diversity on the time taken to achieve Profitability Type II using Multiple Linear Regression

	Model 21a			Model 22a			Model 23a			Model 24a		
Profitability Type II (ln months)	**t-value (*SE*)**	**(β)**	**Robust SE**	**t-value (*SE*)**	**(β)**	**Robust SE**	**t-value (*b*)**	**(β)**	**Robust SE**	**t-value (*b*)**	**(β)**	**Robust SE**
Controls												
Team Size	-1.10			-1.10			-1.10			-0.82		
	(0.156)	-0.116	0.115	(0.152)	-0.119	0.135	(0.151)	-0.115	0.110	(0.165)	-0.100	0.164
Trading[1]	-2.09*			-2.65*			-2.13*			-2.40*		
	(0.367)	-0.227	0.318*	(0.348)	-0.301	0.343**	(0.347)	-0.233	0.324*	(0.348)	-0.283	0.346*
Service[1]	-0.08			-0.57			-0.19			-0.37		
	(0.230)	-0.009	0.250	(0.230)	-0.065	0.258	(0.224)	-0.021	0.255	(0.234)	-0.044	0.231
Opportunity[2]	1.67†			1.95†			1.45			1.69†		
	(0.223)	0.184	0.185*	(0.220)	0.218	0.192*	(0.216)	0.161	0.200	(0.222)	0.196	0.221†
Necessity[2]	-1.14			-1.33			-1.87†			-1.29		
	(0.375)	-0.120	0.569	(0.431)	-0.144	0.641	(0.374)	-0.196	0.504	(0.436)	-0.146	0.433
Mean work hours (ln)	2.14*			2.25*			2.06*			2.11*		
	(0.063)	0.218	0.065*	(0.064)	0.237	0.069*	(0.062)	0.209	0.064†	(0.066)	0.231	0.066†
Independent variables												
Gender (=1)	-0.42	-0.043	0.227							-0.66		
	(0.227)									(0.242)	-0.080	0.237
Age diversity (ln)				-1.47	-0.155	0.118				-1.18		
				(0.103)						(0.113)	-0.139	0.112
Ethnicity (=1)								0.166		1.30		
							1.61			(0.249)	0.142	0.248
							(0.252)		0.269			
_const	5.60***		0.486***	4.46***		0.597***	5.59***			4.35***		
	(0.525)			(0.572)			(0.507)		0.472***	(0.585)		0.583***
Obs.	91		91	78		78	86		86	76		76
R-squared	0.1808		0.1808	0.2832		0.2832	0.2327		0.2327	0.2817		0.2817
Adjusted R-squared	0.1117			0.2116			0.1639			0.1837		
F (df)	2.62*(7)		3.79**(7)	3.95**(7)		5.06***(7)	3.38**(7)		4.27***(7)	2.88**(9)		3.55**(9)

Significance levels: †>.10; *>.05; **>.01; ***>.001

[1] The reference category represents manufacturing

[2] The reference category represents those entrepreneurs which motivation to start a business come from both, the business decision and business idea.

Gender (=1) refers to heterogeneous teams.

Ethnicity (=1) refers to ethnically heterogeneous teams.

Appendix 45 The effect of Human Capital on the time taken to achieve Profitability Type II using Multiple Linear Regression

	Model 25a			Model 26a			Model 27a			Model 28a		
Profitability Type II (ln months)	**t-value (*SE*)**	**(β)**	**Robust SE**	**t-value (*SE*)**	**(β)**	**Robust SE**	**t-value (*b*)**	**(β)**	**Robust SE**	**t-value (*b*)**	**(β)**	**Robust SE**
Controls												
Team Size	-1.37 (0.166)	-0.147	0.129†	-1.03 (0.165)	-0.110	0.123	-1.56 (0.184)	-0.172	0.133*	-1.37 (0.200)	-0.166	0.164
Trading[1]	-2.18* (0.376)	-0.242	0.331*	-2.09* (0.370)	-0.229	0.311*	-2.17* (0.369)	-0.239	0.326*	-2.13* (0.381)	-0.243	0.335*
Service[1]	-0.07 (0.233)	0.007	0.259	-0.01 (0.235)	-0.001	0.254	-0.04 (0.236)	-0.004	0.260	0.01 (0.241)	0.001	0.263
Opportunity[2]	1.73† (0.227)	0.192	0.191*	1.57 (0.229)	0.176	0.192†	1.67† (0.229)	0.186	0.191*	1.54 (0.234)	0.176	0.195†
Necessity[2]	-1.10 (0.377)	-0.116	0.566	-1.18 (0.379)	-0.124	0.574	-1.07 (0.377)	-0.114	0.574	-1.13 (0.385)	-0.124	0.579
Mean work hours (ln)	2.04* (0.064)	0.208	0.065*	2.06* (0.064)	0.210	0.066†	2.37* (0.067)	0.252	0.063*	2.28* (0.068)	0.247	0.062*
Independent variables												
Education (=1)	0.65 (0.218)	0.069	0.227							0.18 (0.230)	0.020	0.244
Industry (=1)				0.79 (0.211)	0.081	0.212				0.48 (0.220)	0.052	0.223
Experience Start-up Experience (=1)							1.08 (0.234)	0.122	0.219	1.03 (0.239)	0.119	0.222
_const	5.54*** (0.533)		0.490***	5.00*** (0.561)		0.504***	5.10*** (0.559)		0.499***	4.59*** (0.606)		0.518***
Obs.	90		90	89		90	87		87	86		86
R-squared	0.1836		0.1836	0.1858		0.1858	0.1995		0.1995	0.2014		0.2014
Adjusted R-squared	0.1139			0.1154			0.1285			0.1069		
F	2.63*(7)		4.18***(7)	2.64*(7)		4.09***(7)	2.81*(7)		4.22***(7)	2.13*(9)		3.42**(9)

Significance levels: †>.10; *>.05; **>.01; ***>.001.

[1] The reference category represents manufacturing

[2] The reference category represents those entrepreneurs which motivation to start a business come from both, the business decision and business idea.

The three HC variables (=1) refer to heterogeneous teams

Appendix 46 The effect of Resource Heterogeneity and Familiarity on the time taken to achieve Profitability Type II using Multiple Linear Regression

	Model 29a			Model 30a		
Profitability Type II (ln months)	**t-value (*SE*)**	**(β)**	**Robust SE**	**t-value (*SE*)**	**(β)**	**Robust SE**
Controls						
Team Size	-0.90			-1.39		
	(0.154)	-0.096	0.113	(0.166)	-0.155	0.130†
Trading[1]	-2.41*			-2.07*		
	(0.363)	-0.266	0.310**	(0.367)	-0.225	0.318*
Service[1]	-0.47			-0.05		
	(0.232)	-0.054	0.241	(0.230)	-0.005	0.251
Opportunity[2]	1.58			1.62		
	(0.223)	0.177	0.190†	(0.224)	0.179	0.184†
Necessity[2]	-1.24			-1.14		
	(0.369)	-0.131	0.560	(0.373)	-0.119	0.571
Mean work hours (ln)	2.00*			2.16*		
	(0.068)	0.215	0.069†	(0.063)	0.219	0.066*
Independent variables						
Resource Heterogeneity	-1.19 (0.082)	-0.129	0.076			
Familiarity (=1)				0.63 (0.223)	0.070	0.225
_const	5.96*** (0.557)		0.504***	5.63*** (0.520)		0.485***
Obs.	89		89	91		91
R-squared	0.1887		0.1887	0.1830		0.1830
Adjusted R-squared	0.1185			0.1141		
F	2.69*(7)		3.80**(7)	2.66*(7)		3.91**(7)

Significance levels: †>.10; *>.05; **>.01; ***>.001.

[1] The reference category represents manufacturing

[2] The reference category represents those entrepreneurs which motivation to start a business come from both, the business decision and business idea.

The three HC variables (=1) refers to heterogeneous teams

Familiarity (=1) refers to more distant-related